#1566896949 ID: 88076640

TK
3001
.H37
2002

Northwest Service Upgrade – Centennial Plan
Harry Allen – Northwest 500kV Transmission Line
Biological Assessment

May 2002

Prepared for
U.S. Bureau of Land Management
BLM Case No. N-75025

Prepared by
POWER Engineers, Inc.
1295 S. Eagle Flight Way
Boise, Idaho 83709

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

Table of Contents

1.0 PROJECT DESCRIPTION 1

General Description of Facility 1

Project Location 1

2.0 SPECIES ACCOUNTS 3

Species Potentially Affected by the Proposed Action 3

General Description of Affected Environment 4
  Botanical Resources 4
  Wildlife Resources 5

Sensitive Species 5
  Botanical Resources 5
  Wildlife Resources 8

3.0 CONSERVATION MEASURES 11
  Botanical Resources 11
  Wildlife Resources 11

5.0 REFERENCES AND LITERATURE CITED 17

6.0 CONTRIBUTORS AND PREPARERS 19

APPENDICES 21

  Appendix A
  Terms and Conditions of Desert Tortoise Biological Opinion(s)

  Appendix B
  Biological Survey Reports from Southern Nevada Environmental Institute and Knight and Levitt Associates

1.0 Project Description

General Description of Facility

To accommodate approximately 1000 MW of power, Nevada Power would construct a 500kV transmission line from the Harry Allen 500kV Switchyard to the existing Northwest Substation northwest of Las Vegas (Figure 1). The first five miles of the transmission line would be a double circuit 500kV lattice structure with Duke. These structures will carry one circuit for Duke and one circuit that will continue on to the Northwest Substation. These circuits will be strung simultaneously for safety reasons. Pole structures are proposed (as shown on Map 2, Appendix A of the Harry Allen – Northwest Environmental Assessment [EA]) for approximately 20 miles of the 31-mile transmission line. The remainder of the transmission line is designed with lattice structures because of lower maintenance costs and flexibility. Single pole construction is utilized when the alignment is forced into a narrow right-of-way because of adjacent property owners and other constraints. Maintenance costs are higher for single pole structures because it requires man-lift equipment, such as bucket trucks, whereas lattice structures can be climbed. Additionally, lattice towers are well suited for complex terrain, such as found in the eastern portion of the plan area. Although birds that prey on tortoise utilize lattice towers, the portion of the transmission line where lattice towers are used is in a corridor where existing transmission structures are located.

The Northwest Substation would require upgrades to a 500/230kV substation to accommodate the new transmission line. The Northwest Substation will be expanded from its present size of approximately 20 acres to 25 acres to accommodate a 500kV breaker, five new switches, and four 500kV to 230kV transformers. The Northwest Substation is on Nevada Power property and does not require an EA.

The design, construction, operation, and maintenance of the line would meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor, Occupational Safety and Health Standards, and Nevada Power's requirements for safety and protection of landowners and their property.

Project Location

The Proposed Action would includes a new 31-mile 500kV transmission line, of which 22 miles is on public lands administered by the Bureau of Land Management (BLM), four miles administered by Nellis Air Force Base, and five miles of private land. The route will stay within a BLM-designated utility corridor, Las Vegas (City of Las Vegas, 1999) and North Las Vegas (City of North Las Vegas, 1999) approved transmission corridors, and/or will parallel existing transmission lines for all but five miles of the line. BLM-designated corridors were not included in the BLM's 1998 Resource Management Plan (RMP) because growth and development was not expected to be as explosive through the northwest portion of the Las Vegas Valley. The existing substation facility is on private property owned by Nevada Power.

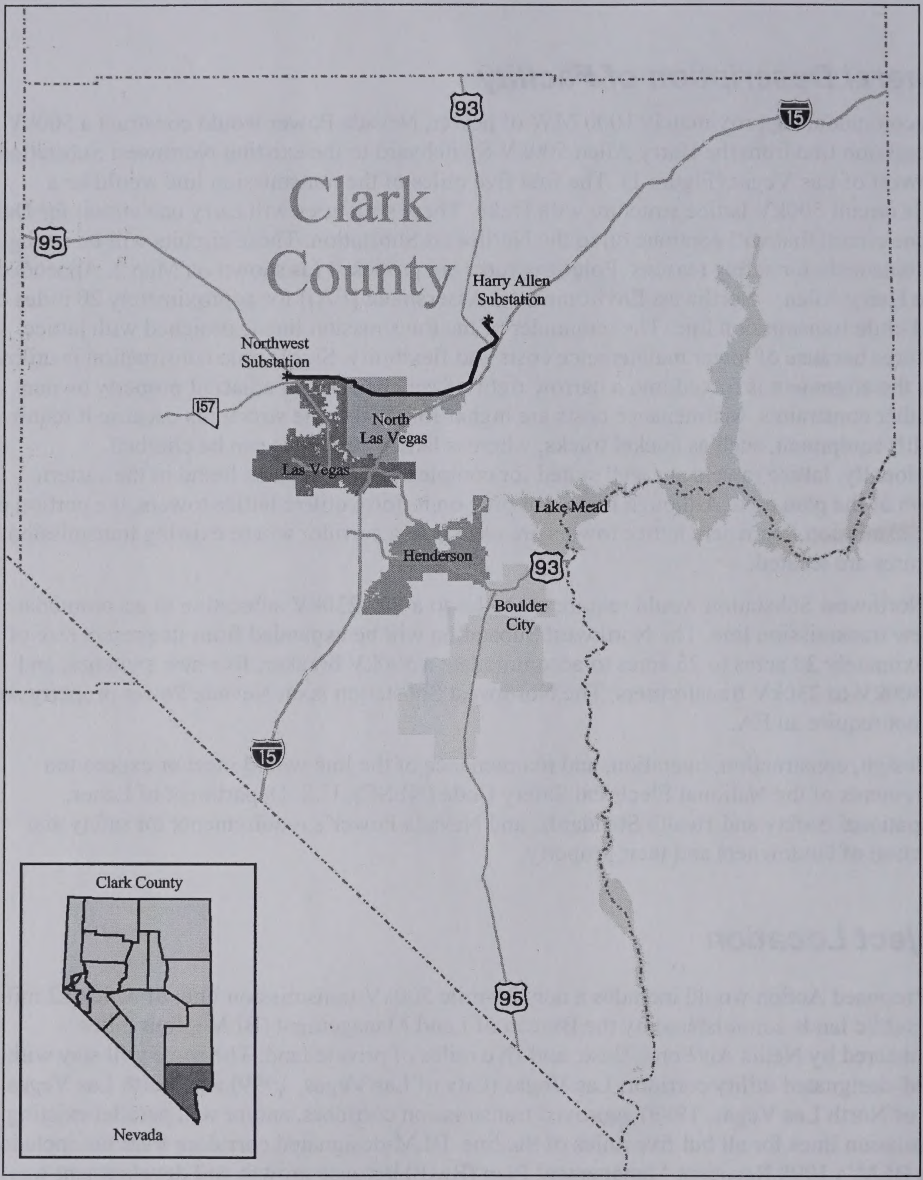

93
15
Clark County
95
Harry Allen Substation
Northwest Substation
157
North Las Vegas
Las Vegas
Lake Mead
Henderson
93
Boulder City
15
95
Clark County
Nevada

Figure 1 **Project Location**

2.0 Species Accounts

Species Potentially Affected by the Proposed Action

This Biological Assessment (BA) has been prepared to address the potential impacts to sensitive species resulting from construction and operation of the Proposed Action, as well as recommended measures designed to mitigate and compensate for those impacts. This report contains information needed by the U.S. Fish and Wildlife Service (USFWS) to complete a Biological Opinion, in accordance with the requirements of Section 7 of the Endangered Species Act, as amended.

A species list provided by the USFWS (File Number 1-5-02-SP-451, Williams 2002) revealed just one federally listed species occurring in the project area, the desert tortoise (Threatened). This species is covered under the programmatic Biological Opinions developed for tortoises inside (File No. 1-5-96-F-23R.AMD2) and outside (File No. 1-5-97-F-251) the Las Vegas Valley. Thirty species classified by the USFWS as Species of Concern were included on the species list and can be found in Table 1.

Table 1 Listed Species and Species of Concern That May Occur Near the Project Area

Common Name	Scientific Name	Classification		
		USFWS	BLM	State
REPTILES				
Desert tortoise	*Gopherus agassizi*	LT	LT	none
Chuckwalla	*Sauruomaulus obesus obesus*	none	S	none
Banded gila monster	*Heloderma suspectum cinctum*	S	S	none
BIRDS				
Western burrowing owl	*Athene cunicularia*	S	S	none
American Peregrine falcon	*Falco peregrinusanatum*	S	S	P
Phainopepla	*Phainopepla nitens*	none	none	yes
Blue Grosbeak	*Guiraca caerulea*	S	S	none
Summer tanager	*Piranga rubla*	S	S	none
Lucy's warbler	*Vermivora luciae*	S	S	none
MAMMALS				
California leaf-nosed bat	*Macrotus californicus*	S	none	none
Big free-tailed bat	*Nyctinomops macrotis*	S	none	none
Western small-footed myotis	*Myotis ciliolabrum*	S	none	none
Long-legged myotis	*Myotis volans*	S	none	none
Fringed myotis	*Myotis thysanodes*	S	none	none
Long-eared myotis	*Myotis evotis*	S	none	none
Cave myotis	*Myotis velifer brevis*	S	none	none
Yuma myotis	*Myotis yumanensis*	S	none	none
Spotted bat	*Euderma maculatum*	S	S	P
Allen's big-eared bat	*Idionycteris phyllotis*	S	none	none
PaleTownsend's big-eared bat	*Corynorhinus townsendii pallescens*	S	none	none
Greater western mastiff bat	*Eumops perotis californicus*	S	none	
PLANTS				
Sticky ringstem	*Anulocaulis leiosolenus*	S	S	

Las Vegas bearpoppy	*Arctomecon californica*	S	S	T
White bearpoppy	*Arctomecon merriamii*			
Sheep Mountains milkvetch	*Astragulus amphioxys musimonum*	S	S	T
Halfring milkvetch	*Astragulus mohavensis var. hemigyrus*			
Black wooly-pod	*Astragalus funereus*	S		
Las Vegas buckwheat	*Eriogonum corymbosum var. aureum*	S		
Yellow two-tone beardtongue	*Penstemon bicolor ssp. bicolor*	S		W
Rosy two-toned penstemon	*Penstemon bicolor spp. roseus*	S	S	
Delicate rock daisy	*Perityle megalocephala var. intricata*			
Parish's phacelia	*Phacelia parishii*			

Source: Williams 2002, File Number 1-5-02-SP-451.

USFWS: LE=Endangered; LT=Threatened; NL=Not Listed in a portion of the species' range. S= Species of Concern PS= Partial Status: a subspecies or a portion of a taxon's range has listed or candidate status, but not in Nevada.

BLM: S=Nevada Special Status Species (USFWS listed, proposed or candidate for listing, or protected by Nevada state law). N=Nevada Special Status Species (designated Sensitive by State Office). P=Proposed Nevada Special Status Species.

State: P=Protected, T=Threatened, W=Watch-list species.

General Description of Affected Environment

The plan area reaches from the northwestern portion of the city of Las Vegas, Nevada, to approximately 27 miles northeast. The plan area lies in the Basin and Range physiographic province. It is characterized by a series of generally north-trending mountain ranges separated by alluviated valleys (Stewart, 1980). The climate in southern Nevada is influenced largely by location, regional weather systems, and topographic orientation. The climate is characterized by hot, dry summers and cool, dry winters. Moderate to hot temperatures, low humidity, and little annual rainfall characterize the region.

Botanical Resources

The project area is dominated by creosote bush scrub vegetation typical of the Mojave Desert. The "scrub" is composed of creosote bush - white bursage (*Larrea tridentata - Ambrosia dumosa*) and a variety of perennial shrubs and succulents. Portions of the project area are dissected by washes where cat's claw (*Acacia greggii*), bladder sage (*Salazaria mexicana*), sweetbush (*Bebbia juncea*) and grasses are more dominant than the creosote bush. Badlands are fairly depauperate with creosote bush occuring, but in very small numbers. Vegetation on the badlands is very open and contains the rare plant habitat of concern. Vegetation Communities, Cover Types, and Special Status Botanical Species are mapped in Appendix A, Map 6 located in the Harry Allen – Northwest 500kV Transmission Line Environmental Assessment. Impacts identified on this map are discussed detail in Chapter 4 of the Harry Allen – Northwest 500kV Transmission Line Environmental Assessment.

Wildlife Resources

The plan area lies east and south of the Desert National Wildlife Range (DNWR). This refuge, the largest outside of Alaska, was established for the protection of desert bighorn sheep. A wide variety of other desert wildlife lives on the range and in the surrounding areas. Wildlife species in the plan area are those that have adapted to desert scrub habitats with little cover and dry conditions. Because surface water is rare and transitory, no fish or amphibian species occur in the plan area. A limited number of reptile, bird, and mammal species are likely to occur in the arid habitat of the plan area.

Sensitive Species

Botanical Resources

Methods

Botanical surveys were completed from Knight and Leavitt Associates (K&LA) in January, March, and April, 2002. The purpose of these surveys was to verify the locations of rare plant species, especially Las Vegas buckwheat (*Eriogonum corymbosum* var. *glutinosum*) and Las Vegas bearpoppy (*Arctomecon californica*), a State-listed endangered species. Both habitat and species locations were noted within the proposed corridor. Other spring flowering plants of concern include sticky buckwheat (*Eriogonum viscidulum*), three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*), Beaver Dam breadroot (*Pediomelum castoreum*), and rosy two-toned penstemon (*Penstemon bicolor* ssp.*roseus*). Cacti and yuccas, and mesquite trees were noted as well.

A Species Account was provided in previous reports (K&LA 2001, K&LA 2002). The reader is referred to these reports for details on the rare species and their federal and state status. Species that were located and habitat for special status species was documented and mapped on the plan area habitat maps. Habitat and plant locations in proximity to access roads, spur roads, pulling/tensioning sites, and work areas are detailed in the Plan of Development.

A number of species of plants were being searched for during the inventories. Populations were identified from previous field work, existing database records, and current BLM sightings (Marrs-Smith via facsimile dated 9 April 2002). The entire proposed corridor was traversed by biologists using pedestrian surveys to look for species and potential habitat. When found, locations of rare plants, or habitat, were recorded using a handheld global positioning (GPS) unit. Locations were also plotted directly onto project maps in the field. Data from the GPS fix were used to plot final plant/habitat locations.

Individual counts of plants were not made for each species in each site. When encountered, Las Vegas bearpoppy locations were identified using a GPS and the number of live individuals recorded. For Las Vegas buckwheat, the onset of habitat was mapped, not individual plants. Numbers of cacti and yuccas were counted in 25 X 25 ft. plots along the alignment. Areas of relatively higher diversity or density of cacti or yuccas were noted. BLM required locations of all mesquite trees/bosques in the project area to be mapped.

Due to unfavorable growing conditions (i.e. low spring rainfall), many plants were not present at the time the survey was conducted. However, every effort was made to collect and record information regarding highly sensitive species (e.g. Las Vegas bearpoppy, Las Vegas buckwheat) so that those sites could not only be avoided during construction, but also be included in botanical reports, databases, etc. used by the Bureau of Land Management, Las Vegas District office.

Results

During the field survey, two plant species of concern were identified. The locations of the plants and plant habitat are described below. Plant species that were not located within the project area are not discussed in this section.

Las Vegas bearpoppy and Las Vegas buckwheat were located in the project corridor, along with numerous species of cacti and yuccas. Photos of selected sites along the corridor are in located in the botanical report in Appendix B. Field site forms were filled out for these rare plant locations. None of the other species of concern were located. Potential habitat for all of the species of concern was searched with negative findings. While rosy two-toned penstemon could have been in bloom, it was not seen in the many washes that crossed the corridor. Annuals were not out this spring at all. In fact, almost no plants were seen in flower and annuals did not germinate this spring. According to the U.S. Drought Monitor (NOAA 4 April 2002), the Las Vegas area was classified as an area of "severe drought," with impacts for agriculture and fire danger. Severe drought is the midpoint between "abnormally dry" and "exceptional drought."

The proposed corridor follows many existing roads across the project area. The majority of the land in the corridor is already disturbed to varying degrees of severity. The least disturbed sections of the alignment are in the eastern portion of the project area, roughly from center line flag 31 to 100 (Duke Substation to Pecos Road). In this area, the proposed alignment crosses calcareous bedrock and desert pavement covered alluvium that has little disturbance. However, the existing power line road paralleling the proposed corridor is very popular with off-road enthusiasts. Illegal dumping along the dirt utility road is common.

Overall, the area of greatest disturbance is the "badlands," a mixture of lacustrine clays and gypsiferous material. This area, from Jones Boulevard to Revere Street (approximately), is accessible to the urban population of Las Vegas. The land is used for uncontrolled off-road vehicle recreation, random dumping and illegal target shooting. Off-road vehicle use has impacted this area significantly. Portions of the badlands have known rare plants/habitat.

To the east, between Grand Teton Drive and Duke Substation are areas of steep calcareous bedrock. On the bedrock outcrops, the number of cacti increase dramatically (especially barrel cacti). Eight species of cacti were found in the project area, along with Mojave yucca and Joshua tree.

Las Vegas Bearpoppy and Las Vegas Buckwheat Habitat

Two areas along the alignment had clay/gypsiferous exposures that had potential or occupied plant habitat: 1. East of Jones Boulevard to the spillway at Decatur Boulevard and 2. Allen Lane to Revere Street. See photos in attached botantical survey report in Appendix B.

1. Potential habitat occurs from centerline flag 161 (near a large wash) to flag 150 (near the spillway). See Maps 17 and 18 of 22. This area is highly disturbed. No rare plants were

observed in this segment. The nearest recorded Las Vegas bearpoppy sites are under 1 mile. These soils may be inappropriate or so severely disturbed that plants no longer occupy this habitat.

2. Habitat for Las Vegas buckwheat and Las Vegas bearpoppy occurs along the corridor from the vicinity of Allen Lane and Iron Mountain Road to Revere Street and Grand Teton Drive. Plants and habitat for Las Vegas buckwheat were located (approximately) from center line flag 141 to 123 in the badlands topography (T19S R61E sections 6, 7, 8, 9, 15, and 16). See Maps 14, 15, 16 of 22. Habitat is not constant throughout this segment. For example, where the line occurs in the wash bottoms there is no rare plant habitat. Wash bottoms are occupied by creosote bush scrub and mixed alluvial material. However, when the alignment was on the slopes and top of the badlands material, it was in rare plant habitat. Las Vegas buckwheat was found sporadically throughout the corridor from flag 141 to 123. Plant numbers are estimated in the low hundreds for the corridor, access and spur roads and pull/tension sites.

Las Vegas bearpoppy were found near flags 129 and 127 and between flags 124-125 (BLM 2002). See Maps 14, 15, 16 of 22. A total of 7 live plants were seen. Historic records for Las Vegas bearpoppy occur in the alignment area at Grand Teton Drive and Allen Lane between flags 123 and 124 (Nevada Natural Heritage 2001). This area (flag 125-123) was surveyed intensively and no bearpoppy plants were located. These plants could have died from drought-related conditions or have been destroyed by heavy off-road vehicle use of the area. A number of flags in this area were broken or damaged, presumably by motorcyclists or other vehicles.

No other locations of Las Vegas bearpoppy or Las Vegas buckwheat occurred along the corridor or ancillary sites.

Mesquite Bosque

Mesquite trees and mature clumps known as bosques are important habitat for rare avifaunal species. BLM requested that all mesquite trees and bosques in the alignment be recorded. Many clumps of small desert trees occurred along the length of the proposed corridor, but these were cat's claw acacia. None of the trees in the alignment were mesquite. Mesquite were noted in the vicinity, but not actually on the alignment, pull/tension sites, or access and spur roads needed for the project.

Cacti and Yuccas

Cacti and yuccas were noted in the project area. A total of eight species of cacti were identified: beavertail (*Opuntia basilaris*), golden cholla (*Opuntia acanthocarpa*), silver cholla (*Opuntia echinoocarpa*), pineapple cactus (*Neolloydia johnsonii*), cottontop (*Echinocactus polycephalus*), barrel cactus *(Ferocactus acanthodes*), pencil cactus *(Opuntia ramosissima*), and strawberry hedgehog (*Echinocereus engelmannii*). Mohave yucca (*Yucca schidigera*) was the dominant yucca found in the alignment. Some Joshua trees (*Yucca brevifolia*) occurred near the Northwest Substation. Overall, the beavertail cacti were in very poor vigor. Most appeared dead or dying. The remainder of cacti and yuccas were in good health. An area of healthy cacti and yuccas occurs from Decatur Boulevard to Allen Lane, along Log Cabin Way. In this stretch of the corridor, the terrain is mostly undisturbed alluvium with an intact desert pavement. Five species of cacti and Mojave yucca are a visually dominant part of this creosote bush scrub. From Pecos Road east to the Duke Substation, the landscape is relatively intact: creosote bush scrub covers an unbroken desert pavement substrate. Mojave yuccas are frequent and in good vigor (although none were blooming) from center line flag 75 to 31. The alignment crosses a number of calcareous bedrock outcrops from center line flag 60 to flag 50, and flags 35 and 34. Barrel cacti are more frequent on these outcrops. Fifteen plots were placed in the corridor to count cacti and yuccas. Plots were 25 X 25 feet. Densities varied from 0 to 12 individuals per 625 sq.ft. Cacti and yuccas occur in greater densities in the eastern third of the project area. In particular, the densities of cacti were greater on the calcareous outcrops. One plot (near flag 59) had 11 barrels and 1 strawberry hedgehog. In comparison, four plots on the western end of the corridor had no cacti or yuccas (n=0). On average, there were 3 succulents per 625 sq. ft. sampled.

Wildlife Resources

Methods

The wildlife survey was conducted by Southern Nevada Environmental Incorporated (SNEI) biologists in spring 2002. The project area was located on a USGS 7.5-minute quadrangle map supplied to SNEI by POWER Engineers. POWER Engineers previously flagged the proposed transmission line before the survey was conducted by SNEI. The proposed corridor, (200' x 31.18 mile easement) was staked on both sides of the right-of-way boundaries. SNEI conducted the survey on lands within the stakes for the entire distance of the corridor.

Prior to survey of the proposed project area, a database search of the Nevada Natural Heritage Program based on USGS 7.5 minute quadrangle maps of APEX, VALLEY, Tule Springs Park, Gass Peak SW, and Dry Lake NW were obtained. Maps supplied by the Nevada Natural Heritage Program and initial maps supplied by POWER Engineers outlined the location of special status wildlife including endangered or threatened, candidate, and sensitive animal taxa. The field survey was conducted along the 31.18-mile corridor by three biologists qualified to perform desert tortoise and sensitive species surveys. Linear transects were conducted 50-feet apart. Any species of concern that were encountered along the corridor were noted and global positioning system (GPS) data was gathered for use with global information system (GIS) mapping. Sensitive species habitat, sensitive and non-sensitive plant species, soil conditions, and general wildlife activity were also noted.

Results

During the field survey, one animal species of concern was identified. Signs identified and the areas were they were located are listed below.

Desert Tortoise

Sign was observed throughout all links of the Harry Allen to Northwest except for link 7. Link 1 had significant tortoise signs with 31 burrows, one carcass, and scat. The area supports creosote scrub scattered with yucca. The link has mixed soils formed in alluvium on a rolling flat with a portion leading into a steep canyon. Link 3 had 7 signs of tortoise with 5 burrows and 2 carcasses. The beginning of this link is very steep and mountainous with sharp rocks. It contains an abundance of cotton top cacti and scattered yucca. Link 5 contained 14 burrows with no other signs of tortoise observed. The area was mainly flat with a couple of deep washes. The vegetation consisted of creosote shrub and bursage on mixed alluvium soil. Although no signs of tortoises were observed on Link 7, the soil type and vegetation remains consistent with that of Link 5. This link would support desert tortoise although no signs were observed. Link 8 showed large signs of desert tortoise with a possible sensitive bird habitat. There were 32 burrows observed throughout link 8 with signs of scat. The vegetation included: creosote scrub and bursage community, with range ratney, desert trumpet, mormon tea, beaver tail, hedgehog, cholla, barrel and yucca cactus species on gravel to desert pavement with a thin crust and sandy soil beneath. There were numerous small washes intersecting though the link with thickets of mesquite to support avian species. Link 13 supports numerous types of wildlife. Seven signs of tortoise were observed including burrows and scat. Protected avian species (burrowing owl and Phainopepla) were observed in the burrows and surrounding vegetation. The first portion of this link follows similar vegetation and soil patterns at link 8. It contains many small hills and washes with gypsum and some gravel crust in areas. Thickets of mesquite support protected bird species. This area is used heavily by off-road enthusiasts. Link 17 leads into deep washes with gypsum soil. Seven burrows were observed. Link 19 shows a range of soil types with gypsum, gravel, desert pavement, and sandy areas in the small washes. There were 17 signs of tortoise with burrows and scat. The area is prime habitat for gila monster. The final link concluded with creosote and bursage as the dominant species with mormon tea, desert trumpet and indigo bush scattered throughout.

3.0 Conservation Measures

Botanical Resources

The majority of the project area has little impact on the species of concern for federal, state, and county governments. Approximately 2.8 miles of the corridor crosses habitat for Las Vegas bearpoppy and Las Vegas buckwheat (center line flag 141 to 123). If the project is built-out as currently designed, it will have impacts on special status plant habitat. Surface damage will be substantially less if construction is limited to access and spur roads and pole pad sites. More important than the number of plants found is that this habitat holds the seed bank for both Las Vegas bearpoppy and Las Vegas buckwheat. Mitigation for loss of plants and habitat will be consistent with the Restoration Plan.

Wildlife Resources

Desert Tortoise Mitigation

See selectively recommended mitigation measure #2 in Table 3.

When the desert tortoise first received federal protection in 1989, mitigation requirements, designed to reduce impacts to the species, were based on the best available technical and biological information. Since then the responsible federal agencies, by refining the requirements during the approval of hundreds of projects and through increased knowledge of desert tortoise ecology and behavior have developed the relatively standard set of mitigation measures, which are summarized below.

This programmatic consultation outlines different minimization measures depending on the relative density of desert tortoise in the project area. All projects proposed to be covered by this consultation will be reviewed by the BLM's wildlife staff prior to approval of the action. If determined appropriate by the BLM's wildlife staff, the USFWS anticipates that the BLM will impose additional minimization measures for specific projects.

What follows is a summary of the mitigation measures required for the project. See Appendix A for a complete list of required mitigations.

- Reclamation
- Onsite Tortoise Biologist
- Education in desert tortoise protection measures for construction personnel
- Surveys to remove tortoises from construction zones immediately before construction
- Implementation of a litter control program
- Habitat compensation in the Las Vegas Valley

Listed below in Tables 2 and 3 are generic and selectively recommended mitigation measures planned for the Proposed Action. The generic mitigation measures will be implemented as part of the construction protocol. These are not intended to benefit a particular species but rather, to prevent adverse impacts to biological resources in general. These mitigation measures will limit habitat loss and direct loss of individuals.

Table 2 Generic Mitigation Measures

1. All construction vehicle movement outside the right-of-way normally will be restricted to predesignated access, contractor-acquired access, or public roads. Should unforeseeable circumstances occur during construction that require more areas than initially requested, permission must be granted by the BLM prior to disturbance and appropriate remuneration fees would be assessed.
2. The aerial limits of construction activities normally will be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate limits of survey or construction activity.
3. In construction areas where recontouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for resprouting.
4. In construction areas (e.g., marshaling yards, tower sites, spur roads from existing access roads) where ground disturbance is substantial or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration normally will consist of removing and stockpiling topsoil and large rocks from disturbed areas to return temporarily disturbed areas back to original contours. Other methods include reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches.
5. Existing improvements will be repaired or replaced if they are damaged or destroyed by construction activities to their condition prior to disturbance as agreed to by the parties involved.
6. Towers and/or ground wire will be marked with highly visible devices where required by governmental agencies (e.g., Federal Aviation Administration).
7. Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract will address: (a) federal, state, and tribal laws regarding antiquities, fossils, plants and wildlife, including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.
8. Areas that demonstrate high potential for buried paleontological and/or cultural resources shall be identified to the CIC for monitoring during construction.
9. The plan sponsors will respond to complaints of radio or television interference generated by the transmission line by investigating the complaints and implementing appropriate mitigation measures. The transmission line will be patrolled on a regular basis (generally twice annually, once by air and once by ground), so that damaged insulators or other transmission line materials, which could cause interference, are repaired or replaced.
10. The plan sponsors will apply mitigation needed to eliminate problems of induced currents and voltages onto conductive objects sharing a right-of-way to the mutual satisfaction of the parties involved.
11. The plan sponsors will continue to monitor studies performed to determine the effects of audible noise and electrostatic, electric, and magnetic fields.
12. Roads will be built at right angles to the washes to the extent practicable. Culverts will be installed where needed. All construction and maintenance activities will be conducted in a manner that will minimize disturbance to vegetation and drainage channels. All existing roads will be left in a condition equal to or better than their condition prior to the construction of the transmission line.
13. All requirements of those entities having jurisdiction over air quality matters will be adhered to and any permits needed for construction activities will be obtained. Open burning of construction trash will not be allowed unless permitted by appropriate authorities.
14. Fences and gates will be repaired or replaced to their original condition prior to disturbance as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates will be installed only with the permission of the landowner or the land management agency and will be restored to original condition prior to disturbance following construction.
15. A bundle configuration and large diameter conductors will be used to limit the audible noise, radio interference, and television interference due to corona. Tension will be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution will be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.
16. No nonbiodegradable debris will be deposited in the right-of-way.

17. Mitigation measures developed during the consultation period under Section 7 of the Endangered Species Act (1974) will be adhered to as specified in the Biological Opinion of the USDI Fish and Wildlife Service.
18. Hazardous materials will not be drained onto the ground or into streams or drainage areas. Totally enclosed containment will be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials will be removed to a disposal facility authorized to accept such materials.
19. Non-specular conductors will be used to reduce visual impacts.
20. The contractor will use weed-free, native seed mixes if revegetation is required. No species on the "state noxious weed list" will be included in the revegetation seed mixes.
21. All vehicles brought in from out of state will go through high pressure washing prior to use on the project.
22. Dust will be controlled by applying water or chemicals as required during construction.
23. An independent qualified third-party contractor approved by the BLM will monitor the terms and conditions of the plan and report directly to the BLM for compliance.
24. Permits for state of Nevada Critically Endangered Plants will be obtained from the Nevada Division of Forestry if unavoidable impacts to plants will occur.
25. In observance of NRS 503.597 and other applicable NRS and Nevada Administrative Codes, measures, and actions (including mitigation) concerning wildlife not under joint purview of the USFWS and Nevada Division of Wildlife will be **reviewed** by the Nevada Division of Wildlife.
26. Surveys for sensitive plant species will be conducted during times recommended by survey protocol.

Table 3 Selectively Recommended Mitigation Measures

1. In designated areas, structures would be placed to avoid sensitive features such as, but not limited to, sensitive wildlife and plants, cultural sites, and land uses, and/or to allow conductors to clearly span the features, within limits of standard tower design.
2. Mitigation measures for the desert tortoise will be followed in accordance with the US Biological Opinion 1-5-97-F-251 (for a complete description of this mitigation measure see Appendix A). These mitigation measures include:
    - Education in desert tortoise protection measures for construction personnel
    - Surveys to remove tortoises from construction zones immediately before construction
    - Implementation of a litter control program
    - Construction monitoring by qualified biologist
    - Habitat compensation within the Las Vegas District of the BLM
3. If authorization for the plan is provided prior to the breeding season of burrowing owls (mid March – August), all burrows, holes, crevices, or other cavities on the construction site will be thoroughly inspected for inhabitants by a qualified biologist before collapsing. This will discourage owls from breeding on the construction site. If authorization for the plan is not provided until after the commencement of breeding season and burrowing owls can be seen within the area during surveys, behavioral observations will be done by a qualified biologist to determine their breeding status. If breeding behavior is observed, the nest area will be avoided until the chicks fledge to ensure the chicks do not abandon the nest.
4. In compliance with Nevada Administrative Codes regarding protection of the Gila monster, standard NDOW protocols will be followed if a gila monster is encountered during construction activities.
5. If construction must occur during the breeding season of migratory birds, (March 15th - July 30th) the plan area will be surveyed for nests prior to implementation. If a migratory bird nest is found with nestlings present, the area will be avoided until birds fledge. Executive Order issued January 11, 2001 further defines the responsibilities of the Federal Agencies to protect migratory birds; the Migratory Bird Treaty Act of 1918 and subsequent amendments (16 U.S.C. 703-711) state that it is unlawful to take, kill, or possess migratory birds. A list of those protected birds are in 50 C.F.R. 10.13.
6. Temporary disturbance will be restored using cacti and yucca originally salvaged from the site. The material will be salvaged by an experienced contractor, and transplanted. BLM's protocols for proper maintenance of the material will be followed. Restoration will be in accordance with a BLM approved plan.
7. Dulled finish steel poles will be used to reduce visual impacts.
8. Wherever possible, use single pole tubular steel structures in place of lattice structures to avoid significant land use impacts, limit visual impacts, reduce the footprint of structures, and reduce potential perching sites of avian predators of desert tortoise.
9. Minimal widening or upgrading of existing access roads would be undertaken in the area. This would minimize ground disturbance and limit new or improved access ability. This measure can also be applied to limit the disturbance at tower sites and staging areas.
10. All new access roads not required for maintenance would be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner (e.g., stockpiling an replacing topsoil, or rock replacement). This would limit new or improved accessibility in the area.
11. Where necessary to protect cultural resources, perform data recovery in accordance with the SHPO.

4.0 Conclusion

The following determination was made regarding project-related effects to the one listed species, the desert tortoise.

Desert Tortoise

Following implementation of the mitigations measures, it is determined that this project may affect but is not likely to adversely affect the desert tortoise. The mitigation measures detailed in the USFWS Programmatic Biological Opinions inside (File No. 1-5-96-F-23R.AMD2) and outside (File No. 1-5-97-F-251) the Las Vegas Valley (See Appendix A) are expected to reduce impacts to desert tortoise substantially.

5.0 References And Literature Cited

Bradley, W.G., and J.E. Deacon. 1967. The Biotic communities of Southern Nevada. Nevada State Museum Anthropological Papers No. 13, Part 4.

Jones, John. 2001. Nevada Division of Forestry. Personal communication.

Knight, Kenneth. 2001. Knight and Leavitt, Henderson, Nevada. Personal communication.

Knight and Leavitt. 2001. A botanical siting assessment of nineteen study links for a proposed power line in Clark County, Nevada. Las Vegas, Nevada.

______2001. A fall botanical survey of selected links for a proposed power line in Clark County, Nevada. Las Vegas, Nevada.

Morgan, Theresa 1995. Factors affecting distribution of Archtomecon Californica. Master's Thesis.

Mozingo, Hugh N. and Margaret Williams. 1980. Threatened and Endangered Plants of Nevada. An Illustrated Manual. May, 1980. Funded by the U.S. Fish and Wildlife Service and Bureau of Land Management.

National Oceanic and Atmospheric Administration, 2002. U.S. Drought Monitor Map.

Stebbins, Robert C. 1985. Peterson Field Guides. Western Reptiles and Amphibians. Houghton Mifflin Company.

U.S. Bureau of Land Management 1998. Las Vegas Resource Management Plan and Final Environmental Impact Statement.

_____ 2002. Harry Allen – Northwest 500kV Transmission Line Environmental Assessment.

______2002. Facsimile from Gayle Marrs-Smith to Ken Knight regarding rare plant data on the Harry Allen to Northwest Substation corridor. Dated 9 April 2002. 6 pp.

U. S. Fish and Wildlife Service 2000. Clark County Multiple Species Habitat Conservation Plan and Environmental Impact Statement for Issuance of a Permit to Allow Incidental Take of 79 species in Clark County, Nevada. September 2000.

U.S. Fish and Wildlife Service 1997. Programmatic Biological Opinion. File No. 1-5-97-F-251.

Williams 2002. Letter from Robert Williams, USFWS, Southern Nevada Field Office dated February 7, 2002.

6.0 Contributors and Preparers

Contributors

Knight & Leavitt Associates

Southern Nevada Environmental Institute

Preparers

Carolyn Strickling, POWER Engineers, Inc.

Mark Arana, POWER Engineers, Inc.

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

Appendices

Appendix A

Terms and Conditions of Desert Tortoise Biological Opinion(s)

Appendix B

Biological Survey Reports from Knight and Leavitt and Southern Nevada Environmental Institute

Appendix A

Terms and Conditions of Desert Tortoise Biological Opinion(s)

Two programmatic biological opinions (BOs) were developed for tortoises inside (File No. 1-5-96-F-23R.AMD2) and outside (File No. 1-5-97-F-251) the Las Vegas Valley. These BOs were designed to authorize activities within the programmatic area that may result in the loss of tortoises or their habitat for a period of five years beginning in 1997. In order to be covered by these BOs, the transmission line must follow the terms and conditions set forth in these documents; specifically these relate to mitigation measures designed to minimize impacts on the desert tortoise. Some portions of the plan area lie in the area covered by the in-valley BO, and some lie in the area covered by the out-valley BO.

Terms and Condition of Biological Opinion - In Valley

File No. 1-5-96-F-23R.AMD2

8. Holder will comply with the terms and conditions of the Biological Opinion, File No. 1-5-96-F-23R.AMD2, on file at the Bureau of Land Management, Las Vegas District Office.

a. Applicants may voluntarily choose to search for and remove tortoises from lands to be disturbed. Applicants who choose to voluntarily search and remove tortoises shall contract or appoint a qualified individual to oversee the process. Only individuals trained to handle desert tortoises in accordance with U.S. Fish and Wildlife Service (FWS) approved guidelines shall be authorized to handle desert tortoises unless they are in imminent danger. Currently, the FWS approved handling guidelines are described in *Guidelines for Handling Desert Tortoises During Construction Projects*, Desert Tortoise Council, 1994. For tortoise removals, the applicant shall make arrangements with Clark County's tortoise pick-up service (702/593-9027) at least 10 days prior to the commencement of tortoise collection.

Tortoises shall not be placed on private lands or lands under management by an agency other than the Bureau of Land Management (BLM) without written permission of the landowner of agency. Results of the tortoise removal will be reported to the Authorized Officer on Form 2, Optional Tortoise Removal Form.

b. If a tortoise is in imminent danger with immediate death or injury likely (such as from an approaching vehicle or equipment), and the tortoise has been give the opportunity to move but has withdrawn in its shell and is not moving, on site personnel may capture the tortoise and place it in a clean unused cardboard box or similar container. The Clark County tortoise pick-up service, mentioned above, shall be notified immediately. The contained tortoise will be held in the shade or temperature-controlled environment until removed by the pick-up service.

c. If the applicant desires, tortoises encountered during construction may be moved out of harm's way to adjacent habitat in accordance with FWS approved protocol described above. If adjacent habitat is not available, arrangements must be made with the Clark County pick-up service for disposition of collected tortoises. Tortoises shall only be moved to adjacent habitat during the period of March 1 through October 31. Between November 1 and March 1, tortoises shall be deposited with the Clark Count pick-up service (702/593-9027).

Tortoises shall not be placed on private lands or lands under management by an agency other than the BLM without written permission of the landowner or agency. Results of the tortoise removal will be reported to Authorized Officer on Form 2, Optional Tortoise Removal Form.

d. Holder will pay off-site mitigation (fees) of $587 per acre of surface disturbance to the Desert Tortoise Habitat Conservation Fund (702/730-9999)administered by Clark County, for all projects that are outside of the "exclusionary zone". An exception is that there is no mitigation fees for projects impacting less than 0.25 acres.

e. Upon locating a dead, injured, or sick endangered or threatened species, Holder shall notify the U.S. Fish and Wildlife Service, Division of Law Enforcement (FWSLE) in Las Vegas, Nevada at (702) 388-6380. Take care in handling sick or injured desert tortoises to ensure effective treatment and care of the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick of injured desert tortoises or preservation of biological materials from a dead animal, the Holder is responsible to perform instructions provided by the FWSLE to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

f. Sick or injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution (per their instructions) holding appropriate Federal and State permits. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, than they shall be buried away from the project area or cremated, upon authorization by the FWSLE. The Holder/permittee shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises. Sick or injured desert tortoises that are treated by a veterinarian and survive shall be transferred as directed by the FWS.

Terms and Condition of Biological Opinion – Out Valley

File No. 1-5-97-F-251

In order to be exempt from the prohibitions of section 9 of the Act, the applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described below. These terms and conditions are non-discretionary.

Measures shall be taken to minimize take of desert tortoises due to project-related activities.

1. A qualified tortoise biologist shall present a tortoise-education program to all foremen, workers, and other employees working on the project. The program will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of Federal and State laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the biological opinion, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained. Workers will be encouraged to carpool to and from project sites. The program shall be approved by the Service prior to implementation. Specific and detailed instructions will be provided on the proper techniques to capture and move tortoises which appear onsite, in accordance with Service-approved protocol. Currently, the Service-approved protocol is Desert Tortoise Council 1994, revised 1996.

2. A speed limit of 25 miles per hour shall be required for all vehicles on the project site and unposted dirt access roads.

3. During construction activities, tortoise burrows should be avoided whenever possible. If a tortoise is found onsite during project activities which may result in take of the tortoise (e.g., in harms way), such activities shall cease until the tortoise moves, or is moved, out of harms way. The tortoise shall be moved by a qualified tortoise biologist, or individual trained in the proper technique of handling and moving desert tortoises. All workers will also be instructed to check

underneath all vehicles before moving such vehicles. Tortoises often take cover under vehicles.

4. The project shall require a tortoise biologist onsite during construction activities. Unless the area is fenced and cleared, the project will require an onsite biologist during construction of the project during the tortoise active period (March 1 through October 31), and a biologist on call during the tortoise inactive period (November 1 through February 28/29).

5. The Bureau must approve the selected consulting firm/biologist to be used by the applicant to implement the terms and conditions of the biological opinion or permit issued by the Bureau. Any biologist and/or firm not previously approved must submit a curriculum vitae and be approved by the Bureau before authorized to represent the Bureau in meeting compliance with the terms and conditions of the biological opinion. Other personnel may assist with implementing mitigation measures, but must be under direct field supervision by the approved qualified biologist.

   In accordance with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (Service 1992), a qualified desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the Bureau. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days field experience. All tortoise biologists shall comply with the Service-approved handling protocol (Desert Tortoise Council 1994, revised 1996) prior to conducting tasks in association with terms and conditions of the biological opinion. In addition, the biologist shall have the ability to recognize and accurately record survey results.

6. All project areas including construction sites, access routes, staging areas, and fencelines, will be cleared by a qualified biologist before the start of construction or ground disturbance. The parcel shall be surveyed for desert tortoise using survey techniques which provide 100-percent coverage. During the tortoise active season, the preconstruction clearance shall be no more than 3 days before initiation of construction. During the tortoise inactive season, the preconstruction clearance shall be within 5 days before work begins.

7. Desert tortoises encountered experiencing heat stress will be placed in a tub, by a qualified tortoise biologist, with one inch of water in an environment with a temperature between 76 degrees F and 95 degrees F for several hours, until heat stress symptoms are no longer evident.

8. Tortoises and nests found shall be relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1996). Burrows containing tortoises or nests will be excavated by hand, with hand tools, to allow removal of the tortoise or eggs.

9. Tortoises that are moved offsite and released into undisturbed habitat on public land, must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrows in accordance with Desert Tortoise Council (1994, revised 1996).

10. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one will be constructed in accordance with Desert Tortoise Council (1994, revised 1996). During mild temperature periods in the spring and early fall, tortoises removed from the site will not necessarily be placed in a burrow.

11. The project will require fencing, unless determined by the Bureau and Service that the project should not be fenced (e.g., some powerlines, pipelines, and roads). The fence may be temporary. Fenced areas will require an initial tortoise clearance of the fenceline prior to fence construction,

and a tortoise clearance following fence construction.

12. If fence construction occurs during the tortoise active season, a qualified tortoise biologist shall be onsite during construction of the tortoise-proof fence to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, a biologist will thoroughly examine the proposed fenceline and burrows for the presence of tortoises no more than 5 days before construction. Any desert tortoises or eggs found in the fenceline will be relocated offsite by a qualified tortoise biologist in accordance with approved protocol. Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities shall be clearly marked to prevent crushing.

13. Following Fence Construction: Prior to the commencement of project activities, all desert tortoises shall be removed from the site. A qualified biologist shall oversee the survey for and removal of tortoises using techniques providing 100-percent coverage of all areas. Two complete passes of 100-percent coverage will be accomplished. All desert tortoise burrows, and other species burrows which may be used by tortoises, will be examined to determine occupancy of each burrows by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed. Any desert tortoises or eggs found in the fenced area will be removed under the supervision of a qualified tortoise biologist in accordance with Service protocol.

14. After a project has been fenced and a tortoise clearance completed, if the operator encounters a desert tortoise in imminent danger, the operator shall move the tortoise out of harm's way and on to adjacent Bureau land. If the tortoise cannot be avoided or moved out of harm's way onto Bureau land, it shall be placed in a cardboard box or other suitable container and held in a shaded area until the Clark County pickup service or Bureau personnel can retrieve the tortoise.

15. On phased development projects, the operator may have the option with concurrence of the Bureau of initially fencing less than the total project acreage. The fenced area will be enlarged as the disturbance expands. To ensure that no tortoises are harmed, each new segment of fence will be constructed under the provision described in Terms and Conditions 1.k. and 1.l. above.

Appendix B

Biological Survey Reports from Southern Nevada Environmental Institute and Knight and Leavitt Associates

A WILDLIFE SURVEY OF HARRY ALLEN - NORTHWEST 500 KV TRANSMISSION LINE IN CLARK COUNTY, NEVADA

For

Power Engineers
Nevada Power

By

Southern Nevada Environmental, Inc.
Las Vegas, NV

METHODOLOGY: The project area was located on a USGS 7.5-minute quadrangle map supplied to SNEI by POWER Engineers. POWER Engineers previously flagged the proposed transmission line before the survey was conducted by SNEI. The proposed corridor, (200' x 31.18 mile easement) was staked on both sides of the right-of-way boundaries. SNEI conducted the survey on lands within the stakes for the entire distance of the corridor.

Prior to survey of the proposed project area, a database search of the Nevada Natural Heritage Program based on USGS 7.5 minute quadrangle maps of APEX, VALLEY, Tule Springs Park, Gass Peak SW, and Dry Lake NW were obtained. Maps supplied by the Nevada Natural Heritage Program and initial maps supplied by POWER Engineers outlined the location of special status wildlife including endangered or threatened, candidate, and sensitive animal taxa. The field survey was conducted by three desert tortoise and sensitive species qualified biologist along the 31.18 mile corridor. Linear transects were conducted by biologists 50-feet apart. Any species of concern that were encountered along the corridor were noted and global positioning system (GPS) data was gathered for use with global information system (GIS) mapping. Sensitive species habitat, sensitive and non-sensitive plant species, soil conditions, and general wildlife activity were also noted.

SPECIES OF CONCERN: Species of concern for this project were determined by a search of the Nevada Natural Heritage Program (28, March, 2001), the Bureau of Land Management, and the Clark County Multiple Species Habitat Conservation Program species list, (1998, sec. 2.6). The species of concern for the project area are listed in Table 1.

Table 1: SPECIES OF CONCERN IN THE PROJECT AREA

Species of Concern - Animals	**Federal Status***		**State**
	FWS	**BLM**	**NV**
Gopherus agassizii			
desert tortoise	LT	LT	none
Heloderma supecum cinctum			
banded gila monster	<C2	Sensitive	none
Sauromalus ater			
chuckwalla	none	Sensitive	none
Athene cunicularia hypugea			
western burrowing owl	<C2	Sensitive	none
Phainopepla nitens			
Phainopepla	none	none	yes
Vulpes velox			
kit fox	none	none	none

***FWS - U.S. Fish and Wildlife Service Listed Threatened (LT, <C2 former candidate 2 species, BLM sensitive animal list**

The lists of species surveyed for were checked against the most recent editions of the Nevada Natural Heritage Program *Nevada Sensitive Animal List* (2001, March), *Detailed Rare Animal List* (2001, March), *Plant and Animal Watch List* (2001, March), and Clark County Multiple Species Habitat Conservation Plan Section 2.6 *Covered Species, Evaluation Species, and Watch List Species.*

FINDINGS ANIMALS: During the field survey of the Harry Allen to Northwest Right of Way three animal species of concern were identified. These species of concern were listed on Table 1. Signs identified and areas they were identified in are listed below.

Desert Tortoise (*Gopherus agassizii*)- sign was observed throughout all links of the Harry Allen to Northwest except for link 7. Before survey of the proposed line, maps obtained from the Nevada Natural Heritage Museum showed desert tortoise to be located on link 8 at mile 1.4 approximately 1000-feet to the south of the right of way. The second was located on link 19 at mile 4.5 approximately .25-miles to the north. There were signs of tortoise observed throughout the line including; burrows, scat, carcasses, and egg shells

Link 1 had significant tortoise signs with 31 burrows, one carcass, and scat. The area supports creosote scrub scattered with yucca. The link has mixed soils formed in alluvium on a rolling flat with a portion leading into a steep canyon. Link 3 had 7 signs of tortoise with 5 burrows and 2 carcasses. The beginning of this link is very steep and mountainous with sharp rocks. It contains an abundance of cotton top cacti and scattered yucca. Link 5 contained 14 burrows with no other signs of tortoise observed. The area was mainly flat with a couple of deep washes. The vegetation consisted of creosote shrub and bursage on mixed alluvium soil. Although no signs of tortoises were observed on Link 7, the soil type and vegetation remains consistent with that of Link 5. This link would support desert tortoise although no signs were observed. Link 8 showed large signs of desert tortoise with a possible sensitive bird habitat. There were 32 burrows observed throughout link 8 with signs of scat. The vegetation included: creosote scrub and bursage community, with range ratney, desert trumpet, mormon tea, beaver tail, hedgehog, cholla, barrel and yucca cactus species on gravel to desert pavement with a thin crust and sandy soil beneath. There were numerous small washes intersecting though the link with thickets of mesquite to support avian species. Link 13 supports numerous types of wildlife. Seven signs of tortoise were observed including burrows and scat. Protected avian species (burrowing owl and Phainopepla) were observed in the burrows and surrounding vegetation. The first portion of this link follows similar vegetation and soil patterns at link 8. It contains many small hills and washes with gypsum and some gravel crust in areas. Thickets of mesquite support protected bird species. This area is used heavily by off-road enthusiasts. Link 17 leads into deep washes with gypsum soil. Seven burrows were observed. Link 19 shows a range of soil types with gypsum, gravel, desert pavement, and sandy areas in the small washes. There were 17 signs of tortoise with burrows and scat. The area is prime habitat for gila monster. The final link concluded with creosote and bursage as the dominant species with mormon tea, desert trumpet and indigo bush scattered throughout.

The desert tortoise is found in the Mojave Desert of Nevada, California, and portions of Utah and Arizona where it is Federally listed as endangered by the U.S. Fish and Wildlife Service. The tortoises in the project area are not within any tortoise management areas listed in the Clark County Habitat Conservation Plan.

The desert tortoise lives longer than any other reptile in the southwest and is least affected by seasonal changes. Tortoises live in burrows between 2.5 and 10 feet in length (1986:42(1), Medica and Nagy). They serve as a place to escape from the heat of the summer and a place of hibernation in the winter. Most adult tortoises have more than one burrow. They are most active in the spring primarily in late March till the beginning of the summer in June. Adults will continue to be active during the hot summer months, but primarily in the morning and late afternoons only. Monsoons and seasonal summer rain will also bring an increase in tortoise activity. Decrease in tortoise activity will occur as hibernation nears in late October and early November. This leads into hibernation in December though late February.

Adults weigh 4.4-13.2 lbs. and can grow up to 15 inches in length. Most breeding occurs in April and May, and from August to November producing two clutches a year. Female tortoises hold shelled eggs within two weeks after they emerge from hibernation, suggesting that the first clutch is fertilized from the fall matings during the previous year. The eggs are white, spherical in shape, and porcelain in texture. The inverted funnel-shaped nest is usually found in the mouth of the burrow with 5 to 6 eggs per clutch. Hatchlings are approximately 40 mm in length. Females do not start breeding until approximately 15-20 years of age (1994:8, Spotila). Nesting occurs from May to July.

The desert tortoise is herbivorous, feeding on various kinds of indigenous plant life. The plant life in the Mojave Desert is flourishing in the spring, mainly in March and April. Tortoises will primarily eat annual flowering plants during these months. If the annual foliage is not available, tortoises will eat small shrubs or grasses. Tortoises can go a year without water. When it rains in the desert, tortoises will form small depressions in the desert pavement to gather water. The water can then be stored in case of drought or shortage of water during the active season.

Tortoises are semi-fossorial, spending more than 90% of their life underground in burrows or pallets. Tortoise burrows are long tunnels, usually half moon in shape, and can be longer than 6-feet in length. Pallets are usually one-third the size of burrows, are usually shallow, and can be found in washes or under creosote bush. The pallets are maintained for short-term use in the hot summer months to escape from the heat and regulate body temperature. Caliche caverns are often used as burrows when available and may be inhabited by more than one tortoise.

Dangers to the desert tortoise include Upper Respiratory Tract Disease (URTD), habitat loss, competition with domestic livestock for forage, replacement of forage plants by invading species, drought, and automobiles, especially off-road vehicles (1994:8, O'Connor). Mitigation for the desert tortoise should include: 1) Avoidance, 2) Protection of habitat elsewhere in Clark County, 3) Highly restricted access through habitat with mitigation measures including survey, clearance and monitoring, or 4) Funding of research or experimentation related to URTD endemics.

Gila Monster (*Heloderma cinctum*) was not observed during initial surveys of the site although optimal habitat is seen in all links of this project. The Natural Heritage Museum records show sightings throughout Link one of this project, although no research or site studies have been completed on the Gila monster exclusively in this area.

The gila monster (*Heloderma cinctum)* is found within the Mojave Desert. The *H.s. suspectum* resides in the Sonoran and Chihuahuan deserts. It is a State protected species, formerly a USFWS category II species and is currently a BLM special status species.

Its habitat consists of gravelly and sandy soils with shrubs, under rocks, in burrows of other animals and in holes it digs itself (*Herpetology*, Zug). The Gila monster is a stout-bodied lizard that grows 18 to 24 inches in length. It has black, orange, pink or yellow broken blotches, bars and spots, with bands extending onto its tail. Its face is black, and it has small, bead-like scales across its back (*Western Reptiles and Amphibians*, Stebbins). Most of the Gila Monster's teeth have two grooves that conduct the venom from glands in its lower jaw. During warm weather the Gila Monster feeds at night on small mammals, birds, and eggs. Fat stored in the tail and abdomen during this period is utilized during the winter months in hibernation (*Herpetology,* Zug). It generally is diurnal except during the mid-summer months when it is the hottest. Since they have a relatively low operating temperature, they are able to spend less time on the surface.

Mitigation for this species and/or habitat would be: 1) Avoidance, 2) Protection of habitat elsewhere in Clark County and Nevada, and 3) Proper mitigation measures on similar projects.

Chuckwalla *(Sauromalus ater)* was not observed (including fecal pellets) during initial surveys of the site, although optimal habitat is seen in links of this project. Its preferred habitat is boulder-covered slopes, with elevation up to approximately 4,500-feet. The chuckwalla is currently a BLM sensitive species and previously a USFWS candidate category 2 species. It can be found throughout the deserts of southern California, southern Nevada, southwestern Utah, and western Arizona.

The chuckwalla is a stout-bodied lizard and is the second largest lizard in the United States, next to the gila monster. It is typically 16 to 18-inches in length with the female being just slightly smaller in size. It's coloring varies between juveniles and adults. In an adult male, the head, shoulder, and pelvic regions are melanistic, while the mid-body is light tan or beige and occasionally speckled with flecks of brown. The tail is commonly off-white (Stebbins, 1985). Adult females are brownish in color with scattered dark-brown and red spots. Juvenile chuckwallas have four or five broad bands across the body with usually three or four on the tail. They are covered uniformly with small scales and have larger scales protecting the opening to the ear.

The chuckwalla is strictly a herbivore. They prefer annual flowers, particularly the brittlebush (*Encelia farinosa)*. If annual flowers are not available they may also eat the new growth and flowers of desert perennials or fruit of the creosote bush (*Larrea tridentata)*(Behler and King, 1979). Mating for the chuckwalla occurs between April and July. Eggs are laid in a clutch of 16 or less between June and August. The eggs usually hatch in later summer or early fall when the weather is still warm (Hanson and Hanson, 1997).

Due to the sensitivity of the species mitigation measures are suggested. Suggestions for the chuckwalla include 1) Avoidance and 2) Habitat and species protection throughout Clark County.

Western burrowing owl *(Athene cunicularia hypugea)* was observed in link 13. The burrowing owl is currently a BLM sensitive species and is formerly a USFWS category II candidate. The burrowing owl can be found in the desert and dry grassland habitat of the Mojave Desert year round. Since the burrowing owl and desert tortoise share the same type of habitat, the Harry

Allen to Northwest line is travelling through burrowing owl habitat as well. Burrowing owls prefer the burrows of desert tortoises or small mammals, but can dig their own burrow in soft soil.

Its long legs distinguish the burrowing owl. It measures approximately 9 to 11-inches in height and is often seen standing erect on the ground or on posts. The adult is boldly spotted on dark brown. However, a juvenile appears buffed (Johnsgard, 1988). The male tends to be paler in color and is larger in size than the female. The head is rounded with yellow eyes, they have white eyebrows and chin stripe.

Burrowing owls are mainly nocturnal or crepuscular. They can be seen in the early morning or late afternoon near the entrance of their burrow. They are considered gregarious and semi-colonial, so are regularly seen in-groups in nesting areas. During the period when they have nestlings or recently fledged young, one or both owls are usually perched on guard near the entrance to the nest burrow (Zeiner, 1990). Burrowing owls mostly pray on insects, small mammals, reptiles, and birds. It usually hunts from a perch, hovers, and displays 'hawk-like' dives before it hops on the ground after its prey.

The male conducts his courtship display in front of the burrow. Breeding occurs between March and August, with peak activity in April and May. The clutch size ranges from 2 to 10 eggs. The young will emerge from the burrow after approximately 2 weeks and are flying by the fourth week. Burrows of smaller mammals are preferred during the breeding period. They will line the nest chamber with excrement, pellets, grass, feathers, and other debris, but is often unlined (Johnsgard, 1988).

The burrowing owl's numbers have been markedly reduced for at least the past 60 years. Decrease in numbers has resulted from habitat loss caused by increased residential and commercial development, conversion of grassland to agriculture, predation from both wild and domestic animals including cats and dogs. Proper mitigation measures including 1) Avoidance 2) Protection of habitat throughout Clark County 3) Survey and clearance of areas that will be disturbed during construction and 4) Highly restricted access through habitat.

Phainopepla *(Phainopepla nitens)* was observed in Mesquite thickets in link 8 and 13. Habitat for the phainopepla can be found in numerous sections of the Harry Allen to Northwest line. Typical habitat includes washes, riparian areas, and other habitats that support arid scrubs. In Clark County the Phainopepla can be seen in Mesquite tree thickets or other areas of high tree or bush density, particularly in the washes of riparian areas. It is a migratory bird that ranges from central California, Southern Nevada, southern Utah, southern New Mexico and western Texas during the winter.

The Phainopepla reaches a length of approximately 16-cm. Its bill is short and thin. They have a dark crest. The males have an entirely black plumage, while the females have a gray plumage. During flight, white wing patches are visible. They have a very long tail and the juveniles look similar to that of the female (Reader's Digest, 1998).

The Phainopepla usually breeds in mesquite brush lands in the early spring, typically March and April. Both the male and female will incubate the eggs for approximately 15 days. Both parents will also take care of the young for up to 19 days before they leave the nest (Robbins, Bruun, Zim, 1966).

It primarily depends on berries of mistletoe for survival. When the berries are not available the bird will eat insects. When there is an abundance of mistletoe berries, phainopeplas will congregate in the hundreds; otherwise, they are difficult to find. The Phainopepla and the mistletoe have a unique relationship (Reader's Digest, 1998). The mistletoe berries depend on the bird to plant them in the branches of a tree. They do this through excreting droppings, which contain seeds, when it hits a branch the seed will begin germination.

Protection of this species can be done through numerous mitigation measures including:

1) Avoidance 2) Habitat preservation and restoration throughout Clark County 3) Survey, clearance, and monitoring of areas that will be disturbed during construction and 4) Highly restricted access through habitat.

Desert Kit Fox *(Vulpes velox)* was not observed in the initial survey of the Harry Allen to Northwest line. However, habitat to support the desert kit fox is found in several areas of the proposed right-of-way. It is currently listed on the Clark County Multiple Species Habitat Conservation Plan species list as high priority, (IE, a species of local concern). It is also listed as a special status species or evaluation species.

The kit fox can be observed in northwestern Texas, New Mexico, Arizona, Utah, southern central California, and Nevada. Currently the desert kit fox is not listed as protected in the state of Nevada. The habitat is optimal throughout the current Right of Way for the kit fox. Typical habitat for the kit fox includes deserts, dry grasslands, scrub, foothills and other arid areas. It lives in a self-excavated den and generally is 3 to 6 meters long and about 1 meter deep with several 8-inch entrances (Anderson and Hadary, 1965). The desert kit fox will maintain usually 4 or 5 dens during the summer months and may rotate dens 2 or 3 times in a month.

The kit fox is relatively small with varied coat color in different seasons. It appears grayish-silver on the back, tail, head, and flanks (Anderson and Hadary, 1965). It carries a buff-orange color underneath in the winter and is generally more red in the summer. Its tail is moderately long and bushy with a black tip. It is approximately 40 to 53-cm in length and 18 to 35-cm tall to its shoulder.

Mating for the kit fox generally occurs between December and February. With a gestation of 50 to 60 days, the liter of 3 to 5 is usually born in March and April. The kit fox will stay in a monogamous pair through the mating season. Newborns are altricial, with closed eyes and closed external ear openings. While the pups are very young, the female remains in the den and is fed by the male (Golightly, 1986). The males will provision the young and female during lactation. The fox will begin foraging with their parents by July, and reach adult weight by late July or August.

During late summer the kit fox is mainly seen in solitary until pairing begins again in October and November. It typically is nocturnal or crepuscular, emerging in early evening to begin hunting (Golightly, 1986). The kit fox is mainly carnivorous eating rabbits, ground squirrels, rats and mice, birds, insects, some perennial and annual grasses and berries will be eaten when hunting is scarce.

Increased modification of habitat including industry, development, and various types of agriculture. Due to a decrease in habitat, suitable habitat has become fragmented creating smaller and more isolated populations. Use of poisons, primarily aimed at coyotes (*C. latrans)* has been theorized as a possible decrease in the fox's numbers, (Scott-Brown et al. 1987). The coyote has been a major cause of death in fox populations. Mitigation measures including; 1) Avoidance 2) Protection of habitat in Clark County 3) Continued listing as high priority in Clark County 4) Survey and mitigation during construction activities.

RECOMMENDATIONS: The Harry Allen to Northwest proposed transmission line project area is administered by the BLM, Nellis Airforce Base, Quail Spring, BIA, and Red Rock Canyon. The proposed line proceeds through areas administered by the BLM from the Harry Allen Substation to link 5 at approximately mile 3. It continues through Nellis AFB property to link 8 approximately mile 3.8. Then will border Nellis AFB Wilderness Study Areas A, B, and C link 13 to mile 3.6. The proposed line then borders Quail Spring Wilderness Study Area to link 19 mile 3.7. The line continues again through BLM administered land until link 19 mile 5. The line concludes at the Northwest Substation while bordering BIA administered land to the north and Red Rock Canyon National Conservation Area to the south. Although the proposed line appears to border areas of concern, caution should be taken during construction to avoid unnecessary disturbance, especially in the wilderness study areas and Red Rock Canyon National Conservation Area. Species of concern should be a priority in all areas along the proposed line.

The BLM should be consulted for guidelines governing disturbance of lands and the payment of mitigation fees should be followed prior to construction. A pre-construction survey and clearance for desert tortoise, burrowing owls, and Phainopepla should be conducted by a qualified desert tortoise and sensitive species biologist. Tortoise and burrowing owl burrows should be identified, flagged, and probed using a fieldcam MDP and Burrow Probe 3 to determine presence. If the burrows are found unoccupied, these burrows should be collapsed or blocked to prevent re-entry. All burrows should be excavated by a qualified biologist. Any tortoises or burrowing owls discovered should be relocated a minimum of 150-feet from the edge of the project right-of-way in undisturbed habitat, preferably near a suitable empty burrow. Avoiding unnecessary disturbance to sensitive species habitat is recommended.

All mesquite bosques and suitable sensitive avian species habitat should be avoided during construction. If disturbance occurs, proper restoration measures are recommended to reduce future harm to the species. Currently, numbers of several species of birds are on a decline in the southwest. Minimizing impacts to existing habitats is recommended.

Reported by: Peggy Goette, B.S. Senior Biologist

Melinda Winney, B.S. Biologist

Jay Stevens, GIS Specialist

LITERATURE CITED

Nagy, Kenneth A. and Phillip A. Medica. *Physiological Ecology of the Desert Tortoises in Southern Nevada*. Herpetologica. The Herpetologists' League, Inc. 1986:42(1)

Spotila, James R. at al. *Conservation Biology of the Desert Tortoise, Gopherus agasizii.* Herpetologists' League, Inc.: Austin, Texas. 1994:8

Zug, G.R. 1993. *Herpetology.* Academic Press San Diego, London, XV. pp. 527

Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians.* 2nd ed. Houghton Mifflin, Boston. pp. 125

Behler, J. L., King, F. W. 1979. *The Audobon Society Field Guide to North American Reptiles & Amphibians*

Hanson, J., Hanson, R. B. 1997. 50 *Common Reptiles & Amphibians of the Southwest*

Johnsgard, P. A. 1988. *North American Owls.* Washington, D.C.: Smithsonian Institution Press.

Zeiner, D. C., et al., eds. 1990. *California's Wildlife.* 3 vols. Sacramento, California: Department of Fish and Game.

Robbins, C.S., Bruun, B., Zim, H.S., (1966). *Birds of North America*. New York: Western Publishing Company, Inc.

World of Birds. Reader's Digest, New York.

Anderson, S. and S. Hadary. 1965. *Kit fox from southern Zacatecas*. Journal of Mammalogy 46:343.

Golightly, R. T. and D. B. Hardenbrook. 1986. *Habitat usage and den sites of kit foxes in Nevada*. Fed. Aid in Restoration Project. W-48-R-15. 77 pages.

Nevada Natural Heritage Program2001 *Nevada Sensitive Animal List.* Department of Conservation and Natural Resources.

2001 *Detailed Rare Animal List.* Department of Conservation and Natural Resources. Clark County Multiple Species Habitat Conservation Plan Section 2.6 *Covered Species, Evaluation Species, and Watch List Species*

A SPRING BOTANICAL SURVEY
OF HARRY ALLEN - NORTHWEST
500 KV TRANSMISSION LINE
IN CLARK COUNTY, NEVADA

For

Power Engineers
Nevada Power

DRAFT

By

Knight & Leavitt Associates
3133 W. Post Road
Las Vegas, NV 89118

April 2002
PLANT BIOLOGICAL SURVEY REPORT

REPORT NUMBER: K&LA 01-0262TE02

DATES OF FIELD OPERATIONS: 16, 17, 23, 24, 30 March and 6, 7, 13, 14 April 2002.

PROJECT DESCRIPTION: Power Engineers provided Knight & Leavitt Associates (K&LA) with engineering maps outlining the location of a proposed power alignment, extending from Harry-Allen Substation to the Northwest Substation in the Las Vegas Valley. The purpose of this spring inventory was to survey for and/or verify the locations of rare plant species, especially Las Vegas buckwheat (*Eriogonum corymbosum* var. *glutinosum*) and Las Vegas bearpoppy (*Arctomecon californica*), a State listed endangered species. Both habitat and species locations were noted within the proposed corridor. Other spring flowering plants of concern include sticky buckwheat (*Eriogonum viscidulum*), three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*), Beaver Dam breadroot (*Pediomelum castoreum*), and rosy two-toned penstemon (*Penstemon bicolor* ssp.*roseus*). Cacti and yuccas, and mesquite trees were noted as well. A Species Account was provided in previous reports (K&LA 2001, K&LA 2002). The reader is referred to these reports for details on the rare species and their federal and state status.

The survey was conducted during the spring to ensure that the majority of plants could be found in flower and locations mapped directly onto topographic sheets. The study area extends from the Harry-Allen Substation to Northwest Substation (see Project Map, Appendix A). Based on previous research and background data, habitat for Las Vegas buckwheat and bearpoppy occurred in the western half of the alignment, while habitat for the other four species was in the eastern half of the alignment. The corridor under consideration is 200 feet wide by 26.98 miles. Additional acreage was surveyed for pull/tension sites, and spur and access roads.

COUNTY AND STATE: Clark County, Nevada.

LAND STATUS: A mixture of private and public (BLM) land.

LEGAL DESCRIPTION: The following description is derived from the application to the BLM for the right-of-way. Further legal descriptions for the access road areas are included following the right-of-way description.

The right-of-way begins within Nevada Power Company's Northwest Substation located in the northwest quarter (NW 1/4) of the northwest quarter (NW 1/4) of Section 1, T19 S, R59E. The right-of-way then travels east, south of the north line of Section 1, T19S, R59E, (also known as the centerline of Moccasin Road) and parallel to an existing 230 Kv transmission line. The line then runs east commencing at the northwest corner of Section 6, T19S, R60E, then running east, south of the north section line, (also known as the centerline of Moccasin Road) and parallel to an existing 230 Kv transmission line a distance of 7,920' +/- (1.5 miles) through sections 6, 5, 4, 3, and 2, to a point approximately 375' east of the northwest corner of Section 1, T19S, R 60E. From this point the right-of-way then travels diagonally in a southeasterly direction a distance of 5,669' +/- (1.07 miles) to a point on the east section line of Section 1. This point is approximately 2,640' +/- south of the northeast quarter of Section 1 and approximately 2,640' +/- south of the northwest corner of Section 6, T19 S, R61E. From this point the right-of-way continues in a straight line easterly direction through Section 6 to a point approximately 1000' +/- west of southwest corner of Section 5, T19S, R61E. The line then continues to the south to a point approximately near the corner junction of Sections 5, 6, 7, and 8, T19S, R61E.

From this point the line travels in a diagonal manner southeast to a point near the corner location of Sections 9, 10, 15, and 16, T19S, R61E. The line then travels east, south of the north line of Section 15, (also being known as the centerline of Grand Teton Drive) and parallel to an existing 230 Kv transmission line through Sections 15, 14, and 13, T19S, R61E and thence through Sections 18, 17, 16, 15, and a portion of 14, T19S, R62E, a distance of 39,600' +/- (7.5 miles) to a point 1,540' +/- west of the northeast corner of Section 14. This point is also 450’ northwest of and parallel with an existing 230kV transmission line along the following courses: the line travels northeast 6,600’+/- (1.25 miles) across the southeast quarter of Section 11 and the south half of Section 12, both in T19S, R 62E. The line continues northeasterly 7,920’+/- (1.5 miles) across Section 7 and the north half of Section 8, both in T19S, R63E, to a point 1,750’ West and 650’ South from the northeast corner of Section 8. The line then traverses northeasterly 5,280’+/- (1 mile) across the northeast quarter of Section 8, the southeast quarter of Section 5 and the south half of Section 4, all in T19S, R63E, to a point 450’+/- south and 990’+/- east from the center quarter of Section 4. The line then commences to the northeast 19,800’+/- (3.75 miles) across the east half of Section 4, T19S, R63E, the east half of Section 33, the west half of Section 34, the west half of Section 27 and across Section 22, all in T18S, R63 E, reaching a point 1,050’+/- west and 375’+/- south from the northeast corner of Section 22. The line then travels to the northeast 1,618’+/- (.31 miles) across the northeast quarter of Section 22, the southeast quarter of Section 15 and the southwest quarter of Section 14, all in T18S, R63E.

At this point, the location of a double circuit 500kV transmission line starts. At a point 733’+/- north and 129’+/- east from the southwest corner of Section 14. The line continues to the northeast 9,092’+/- (1.72 miles) across Section 14 and the north half of Section 13, both in T18S, R63E. The line continues in a northeasterly manner 3,661’+/- (.69 Miles) across the east half of Section 12, T18S, R63E, from a point 1,850’ south and 1,150’ west from the northeast corner of Section 12. The line continues to the northwest 11,592’+/- (2.19 miles) across the northeast quarter of Section 12, across Section 1 and the northeast quarter of Section 2, all in T18 S, R63E, and across Section 35, T17S, R63E. The line continues northeasterly 952’+/- (.18 miles) across Section 35 to its point of termination in the southwesterly portion of the proposed Harry Allen 500kV Substation.

MAPS: Apex (1986), Dry Lake NW (1986), Dry Lake SE (1986), Gass Peak SW (photorevised 1983), Tule Springs Park (photorevised 1983), and Valley (photorevised 1982) U.S.G.S. 7.5 minute topographic sheets. Engineering sheets and aerial photos were also provided and utilized.

METHODOLOGY: A number of species of plants were being searched for during this spring inventory. Populations were identified from previous field work, existing database records, and current BLM sightings (Marrs-Smith via facsimile dated 9 April 2002). The entire proposed corridor was traversed by biologists using pedestrian surveys to look for species and potential habitat. When found, locations of rare plants, or habitat, were recorded using a handheld global positioning (G.P.S.) unit. Locations were also plotted directly onto project maps in the field. Data from the GPS fix were used to plot final plant/habitat locations.

Individual counts of plants were not made for each species in each site. When encountered, Las Vegas bearpoppy locations were identified using a GPS and the number of live individuals recorded. For Las Vegas buckwheat, the onset of habitat was mapped, not individual plants. Numbers of cacti and yuccas were counted in 25 X 25 ft. plots along the alignment. Areas of relatively higher diversity or density of cacti or yuccas were noted. BLM required locations of all mesquite trees/bosques in the project area to be mapped.

SPECIES OF CONCERN: Five species of concern, as well as cacti, yuccas and mesquite were searched for in this spring survey. Previously, searches were made for the fall-blooming Las Vegas buckwheat (KL&A 2001).

FINDINGS: Las Vegas bearpoppy and Las Vegas buckwheat were located in the project corridor, along with numerous species of cacti and yuccas. Photos of selected sites along the corridor are in Appendix B. Field site forms were filled out for these rare plant locations (Appendix C). None of the other species of concern were located. Potential habitat for all of the species of concern was searched with negative findings. While rosy two-toned penstemon could have been in bloom, it was not seen in the many washes that crossed the corridor. Annuals were not out this spring at all. In fact, almost no plants were seen in flower and annuals did not germinate this spring. According to the U.S. Drought Monitor (NOAA 4 April 2002), the Las Vegas area was classified as an area of “severe drought,” with impacts for agriculture and fire danger. Severe drought is the midpoint between “abnormally dry” and “exceptional drought.”

The proposed corridor follows many existing roads across the project area. The majority of the land in the corridor is already disturbed to varying degrees of severity. The least disturbed sections of the alignment are in the eastern portion of the project area, roughly from center line flag 31 to 100 (Duke-Mirant Substation to Pecos Road). In this area, the proposed alignment crosses calcareous bedrock and desert pavement covered alluvium that has little disturbance. However, the existing power line road paralleling the proposed corridor is very popular with off-road enthusiasts. Illegal dumping along the dirt utility road is common.

Overall, the area of greatest disturbance is the "badlands," a mixture of lacustrine clays and gypsiferous material. This area, from Jones Boulevard to Revere Street (approximately), is accessible to the urban population of Las Vegas. The land is used for uncontrolled off-road vehicle recreation, random dumping and illegal target shooting. Off-road vehicle use has impacted this area significantly. Portions of the badlands have known rare plants/habitat.

The project area is dominated by creosote bush scrub vegetation typical of the Mojave Desert. The "scrub" is composed of creosote bush - white bursage (*Larrea tridentata - Ambrosia dumosa*) and a variety of perennial shrubs and succulents. Portions of the project area are dissected by washes where cat's claw (*Acacia greggii*), bladder sage (*Salazaria mexicana*), sweetbush (*Bebbia juncea*) and grasses are more dominant than the creosote bush. Badlands are fairly depauperate with creosote bush occuring, but in very small numbers. Vegetation on the badlands is very open and contains the rare plant habitat of concern. In high precipitation years, Las Vegas bearpoppy seed germinate by the many thousands. In these years the badlands have substantial populations of the Las Vegas bearpoppy. During drought, the populations dwindle, surviving as seeds below ground (and are not visible). Las Vegas buckwheat occurs in similar habitat as the Las Vegas bearpoppy, with its perennial structure visible all year.

To the east, between Grand Teton Drive and Duke-Mirant Substation are areas of steep calcareous bedrock. On the bedrock outcrops the number of cacti increase dramatically (especially barrel cacti). Eight species of cacti were found in the project area, along with Mojave yucca and Joshua tree.

Las Vegas Bearpoppy and Las Vegas Buckwheat Habitat

Two areas along the alignment had clay/gypsiferous exposures that had potential or occupied plant habitat: 1. East of Jones Boulevard to the spillway at Decatur Boulevard and 2. Allen Lane to Revere Street. See photos in Appendix B.

1. Potential habitat occurs from center line flag 161 (near a large wash) to flag 150 (near the spillway). See Maps 17 and 18 of 22. This area is highly disturbed. No rare plants were observed in this segment. The nearest recorded Las Vegas bearpoppy sites are under 1 mile. These soils may be inappropriate or so severely disturbed that plants no longer occupy this habitat.

2. Habitat for Las Vegas buckwheat and Las Vegas bearpoppy occurs along the corridor from the vicinity of Allen Lane and Iron Mountain Road to Revere Street and Grand Teton Drive. Plants and habitat for Las Vegas buckwheat were located (approximately) from center line flag 141 to 123 in the badlands topography (T19S R61E sections 6, 7, 8, 9, 15, and 16). See Maps 14, 15, 16 of 22. Habitat is not constant throughout this segment. For example, when the line occurs in the wash bottoms there is no rare plant habitat. Wash bottoms are occupied by creosote bush scrub and mixed alluvial material. However, when the alignment was on the slopes and top of the badlands material, it was in rare plant habitat. Las Vegas buckwheat was found sporadically

throughout the corridor from flag 141 to 123. Plant numbers are estimated in the low hundreds for the corridor, access and spur roads and pull/tension sites.

Las Vegas bearpoppy were found near flags 129 and 127 and between flags 124-125 (BLM 2002). See Maps 14, 15, 16 of 22. A total of 7 live plants were seen. Historic records for Las Vegas bearpoppy occur in the alignment area at Grand Teton Drive and Allen Lane between flags 123 and 124 (Nevada Natural Heritage 2001). This area (flag 125-123) was surveyed intensively and no bearpoppy plants were located. These plants could have died from drought-related conditions or have been destroyed by heavy off-road vehicle use of the area. A number of flags in this area were broken or damaged, presumably by motorcyclists or other vehicles.

No other locations of Las Vegas bearpoppy or Las Vegas buckwheat occurred along the corridor or ancillary sites.

Mesquite Bosque

Mesquite trees and mature clumps known as bosques are important habitat for rare avifaunal species. BLM requested that all mesquite trees and bosques in the alignment be recorded. Many clumps of small desert trees occurred along the length of the proposed corridor, but these were cat's claw acacia. None of the trees in the alignment were mesquite. Mesquite were noted in the vicinity, but not actually on the alignment, pull/tension sites, or access and spur roads needed for the project.

Cacti and Yuccas

Cacti and yuccas were noted in the project area. A total of eight species of cacti were identified: beavertail (*Opuntia basilaris*), golden cholla (*Opuntia acanthocarpa*), silver cholla (*Opuntia echinoocarpa*), pineapple cactus (*Neolloydia johnsonii*), cottontop (*Echinocactus polycephalus*), barrel cactus (*Ferocactus acanthodes*), pencil cactus (*Opuntia ramosissima*), and strawberry hedgehog (*Echinocereus engelmannii*). Mohave yucca (*Yucca schidigera*) was the dominant yucca found in the alignment. Some Joshua trees (*Yucca brevifolia*) occurred near the Northwest Substation. Overall, the beavertail cacti were in very poor vigor. Most appeared dead or dying. The remainder of cacti and yuccas were in good health. An area of healthy cacti and yuccas occurs from Decatur Boulevard to Allen Lane, along Log Cabin Way. In this stretch of the corridor, the terrain is mostly undisturbed alluvium with an intact desert pavement. Five species of cacti and Mojave yucca are a visually dominant part of this creosote bush scrub. From Pecos Road east to the Duke-Mirant Substation, the landscape is relatively intact: creosote bush scrub covers an unbroken desert pavement substrate. Mojave yuccas are frequent and in good vigor (although none were blooming) from center line flag 75 to 31. The alignment crosses a number of calcareous bedrock outcrops from center line flag 60 to flag 50, and flags 35 and 34. Barrel cacti are more frequent on these outcrops. Fifteen plots were placed in the corridor to count cacti and yuccas. Plots were 25 X 25 feet. Densities varied from 0 to 12 individuals per 625 sq.ft. Cacti and yuccas occur in greater densities in the eastern third of the project area. In particular, the densities of cacti were greater on the calcareous outcrops. One plot (near flag 59) had 11 barrels and 1 strawberry hedgehog. In comparison, four plots on the western end of the corridor had no cacti or yuccas (n=0). On average, there were 3 succulents per 625 sq. ft. sampled.

RECOMMENDATIONS: The majority of the project area has little impact on the species of concern for federal, state, and county governments. Approximately 2.8 miles of the corridor crosses habitat for Las Vegas bearpoppy and Las Vegas buckwheat (center line flag 141 to 123). If the corridor is built-out as currently designed, it will have impacts in 70 acres of occupied rare plant habitat. The 70 acres represents the entire corridor, while it is understood that surface damage will be substantially less if construction is limited to access and spur roads and pole pad sites. More important than the number of plants found is that this habitat holds the seed bank for both Las Vegas bearpoppy and Las Vegas buckwheat. Mitigation for loss of plants and habitat should include a combination of 1) avoidance of directly removing rare plants, 2) pre-construction harvest of existing rare plants, 3) pre-construction harvest of soils in the roadbeds, spur and access roads, and pole locations, 4) salvage of seeds if plants are in fruit at time of construction, and 5) support of ecological studies related to Las Vegas bearpoppy and Las Vegas buckwheat. This work should be monitored by biologists and the mitigation requirements should be outlined by the BLM.

Mesquite trees were not located in the proposed alignment. A number of cat's claw acacia (containing mistletoe) were recorded. These trees were not exceptional specimens. Many trees showed impacts from wood harvesting or use as shelters. If mitigation is required for acacia, then BLM should recommend a tree replacement ratio and a location(s).

Cacti and yuccas occur along the entire alignment, even though densities vary. In some portions of the proposed corridor, cacti and yuccas are already impacted by recreational uses of the land. Some cacti, especially beavertail, are in poor health from drought conditions. The eastern portion of the utility corridor harbors some of the healthiest cacti and yuccas. The area from the military enclosure to Duke-Mirant Substation crosses land that is relatively undisturbed. In this stretch, Mojave yucca are healthy and more frequent. Cacti are more numerous on the calcareous outcrops. Cacti and yuccas should be harvested in the corridor prior to construction.

All new access roads will invite recreational users into previously inaccessible land. This access and use will cause secondary impacts to the land (especially rare plant habitat) not intended by Nevada Power.

REFERENCES

Bureau of Land Management.

2002. Facsimile from Gayle Marrs-Smith to Ken Knight regarding rare plant data on the Harry Allen to Northwest Substation corridor. Dated 9 April 2002. 6 pp.

Knight and Leavitt

2001. A botanical siting assessment of nineteen study links for a proposed power line in Clark County, Nevada. Las Vegas, Nevada.

2001. A fall botanical survey of selected links for a proposed power line in Clark County, Nevada. Las Vegas, Nevada.

NOAA

2002. U.S. Drought Monitor Map. Dated 4 April 2002.

PHOTOGRAPHS OF PROJECT AREA

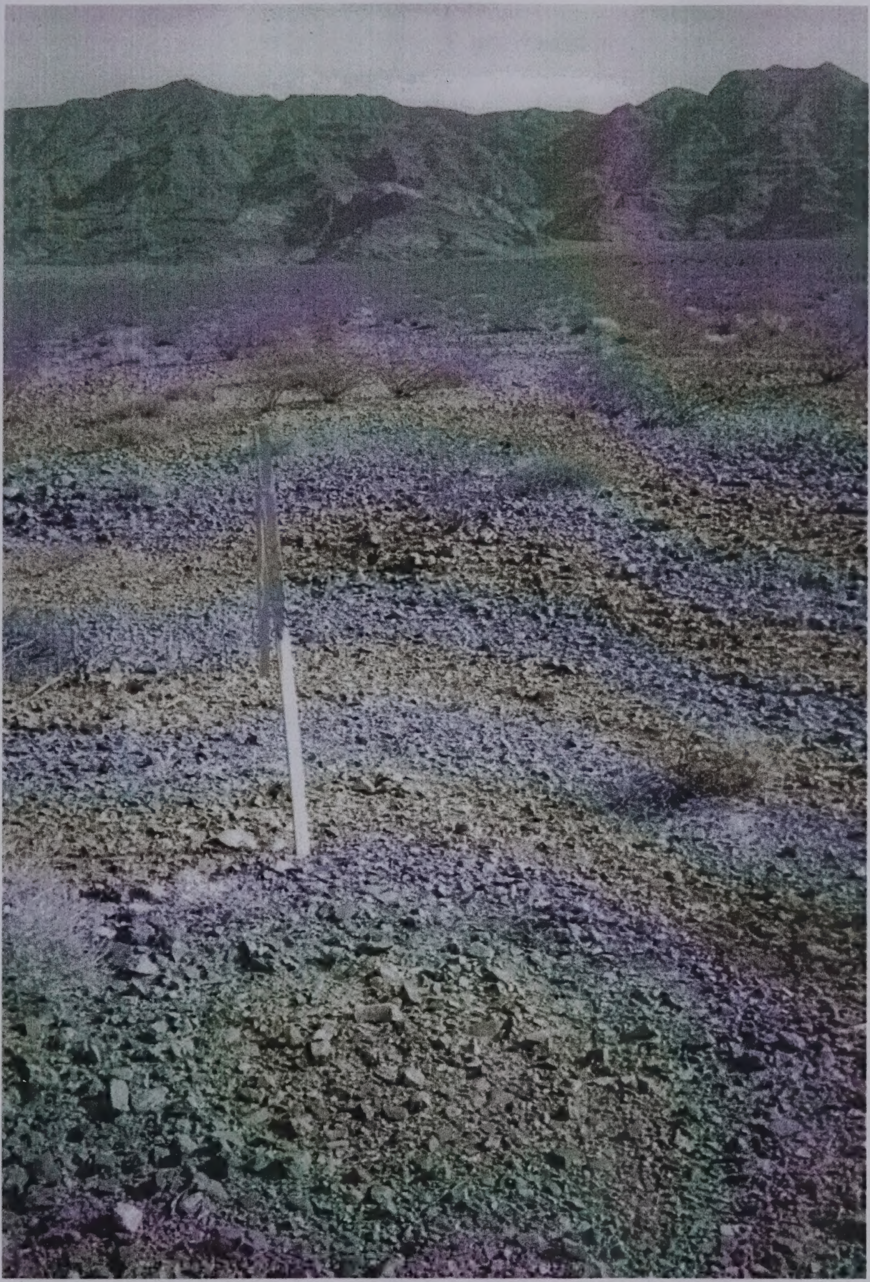


Figure 1- Creosote bush vegetation along Log Cabin Way.
Pole 20986 (=143) T19S, R61E Section 6

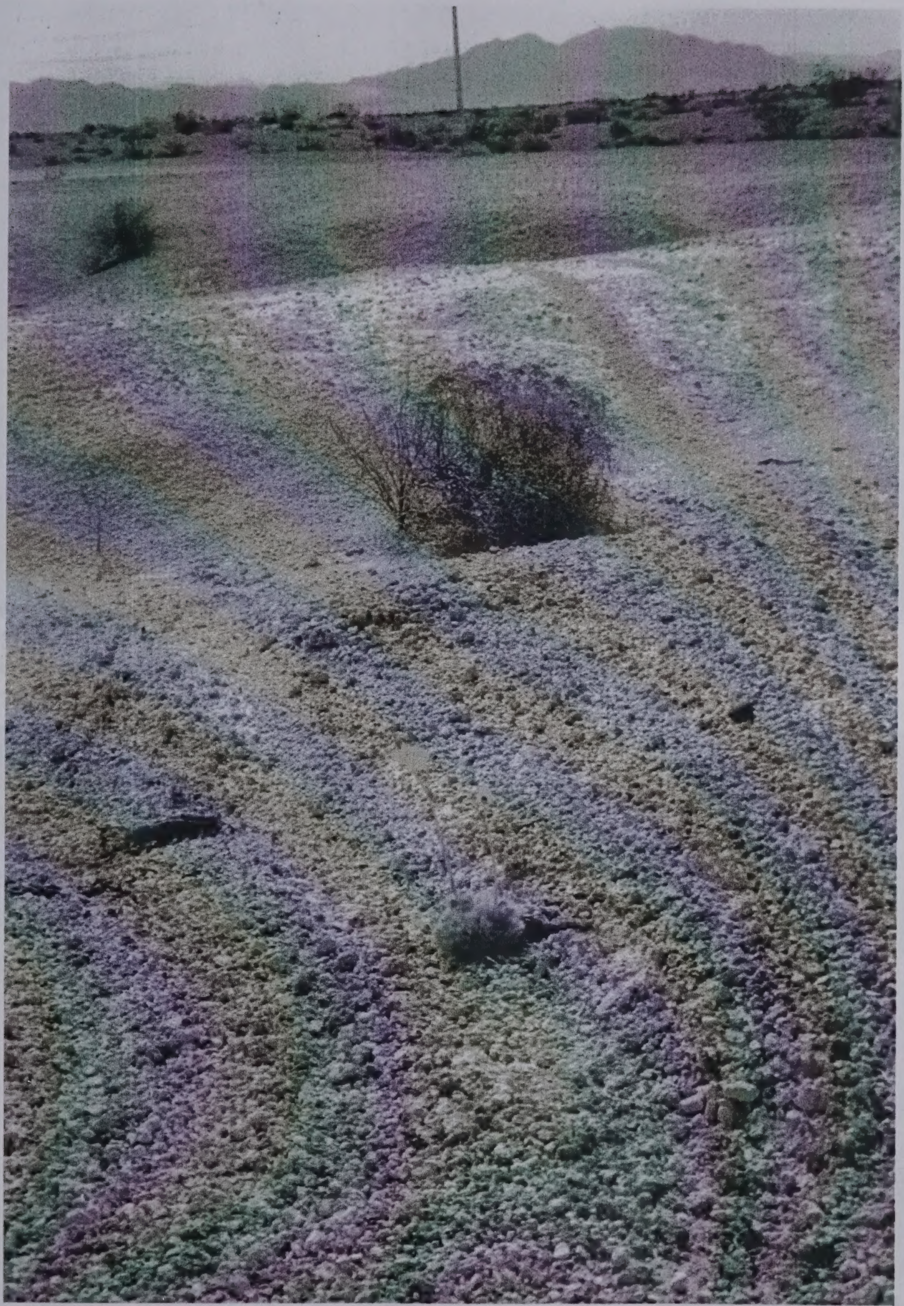


Figure 2- Habitat on alignment at Pole 127-128, T19S, R61E Section 9. A Las Vegas bearpoppy in bloom (foreground) and Las Vegas Buckwheat (center) amidst ORV disturbance

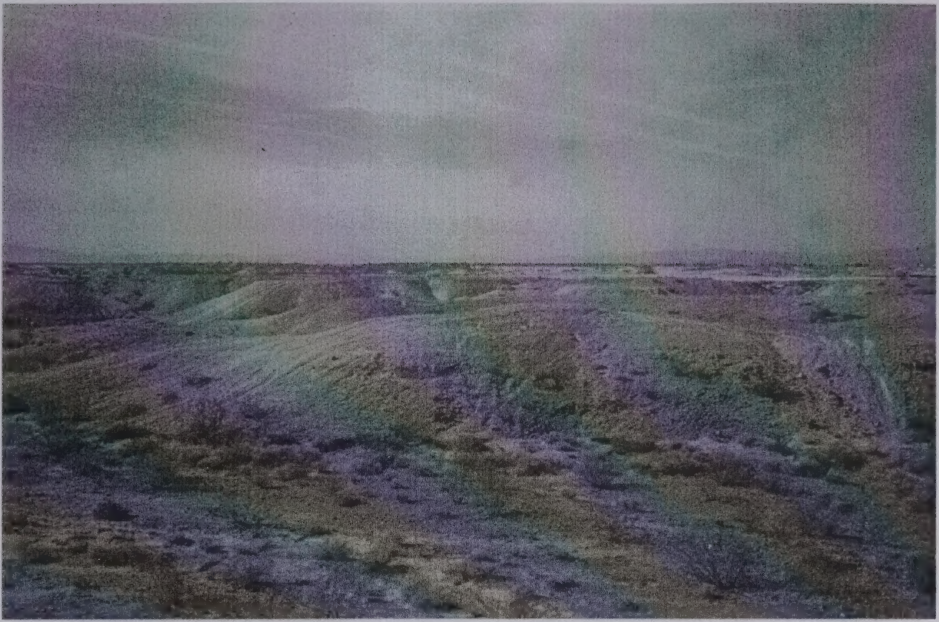


Figure 3- Habitat for Las Vegas bearpoppy and Las Vegas buckwheat in the vicinity of Allen Lane and Iron Mountain Road, near Pole 141, T19S, R61E Section 6. Note ORV disturbance.

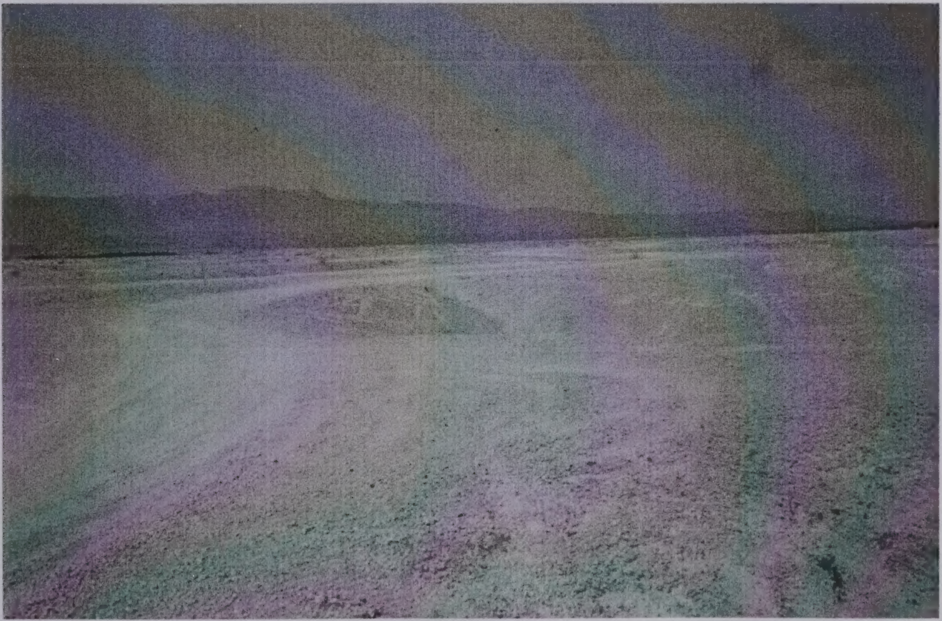


Figure 4- Habitat for Las Vegas bearpoppy and Las Vegas buckwheat on alignment near Pole 20997, T19S, R59E Section 1. Note ORV disturbance.

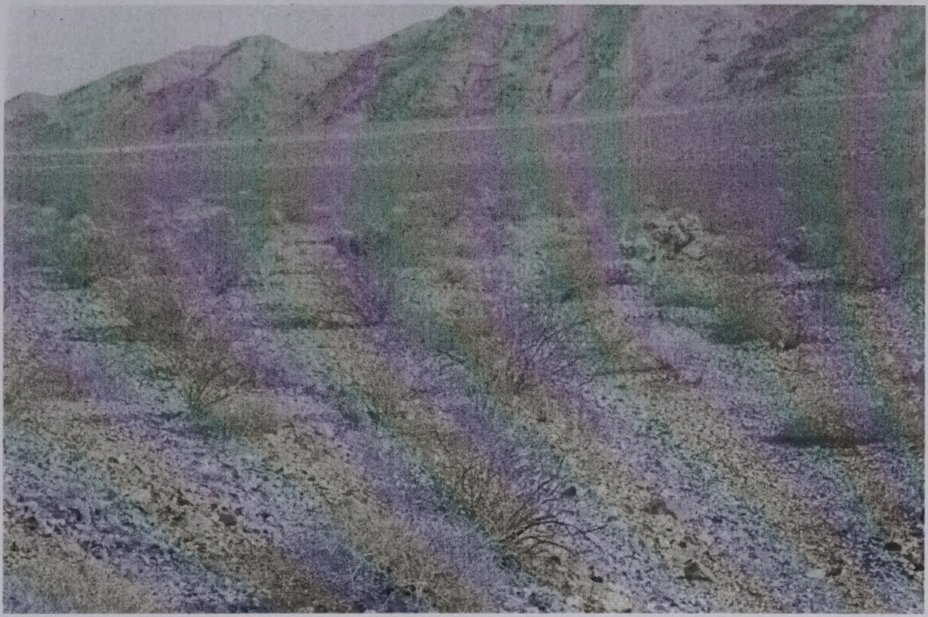


Figure 5- Creosote bush vegetation with cacti along Log Cabin Way, between Pole 20987 and 20986 (144-143) in T19S, R61E Section 6.

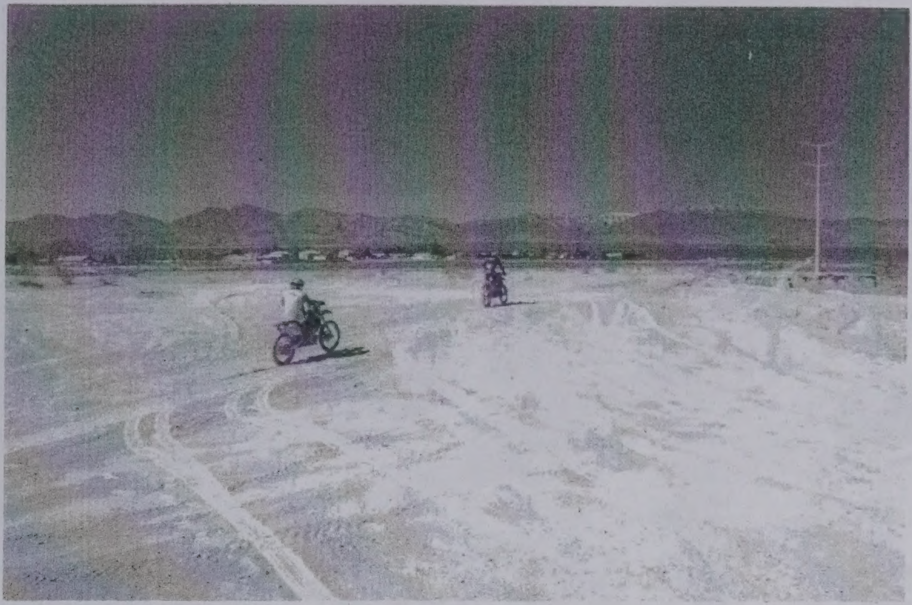


Figure 6- Illustration of ORV use within the APE.

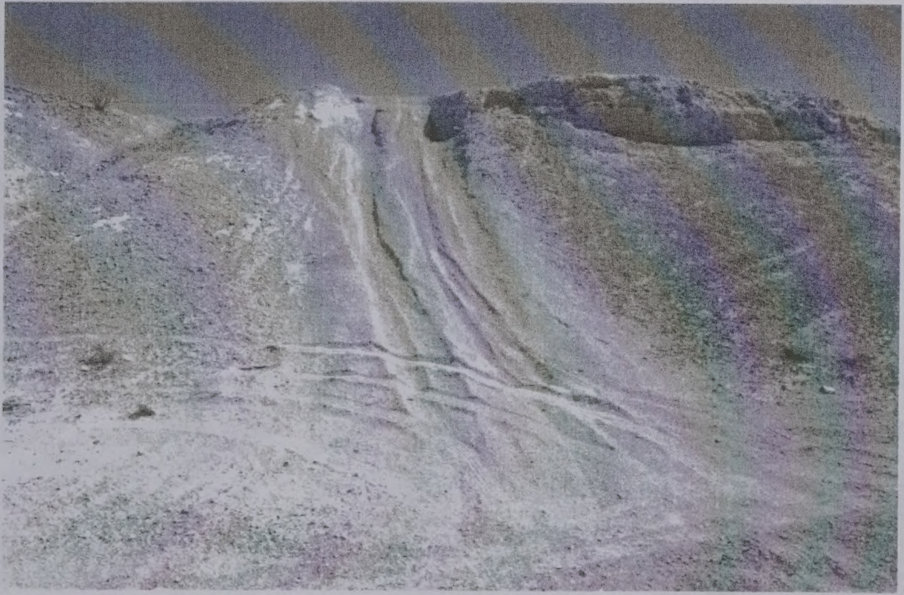


Figure 7- Typical ORV disturbance seen within the APE.

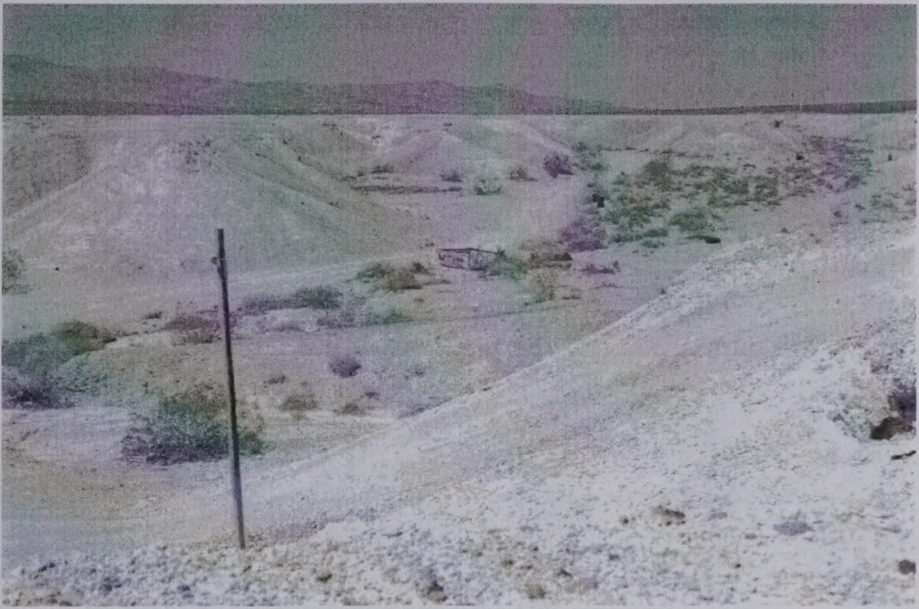


Figure 8- General ORV disturbance seen within the APE, view west.

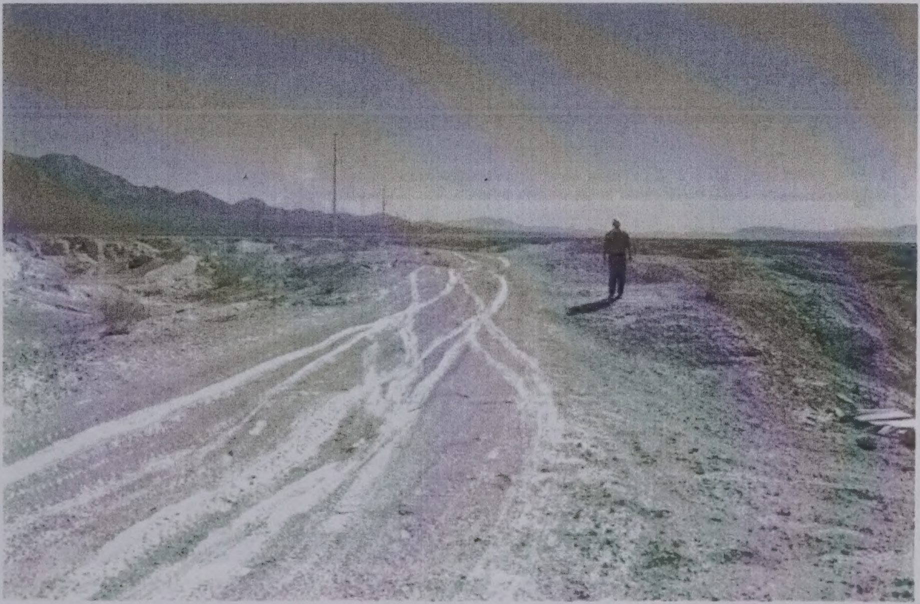


Figure 9- General ORV disturbance seen within the APE, view east.

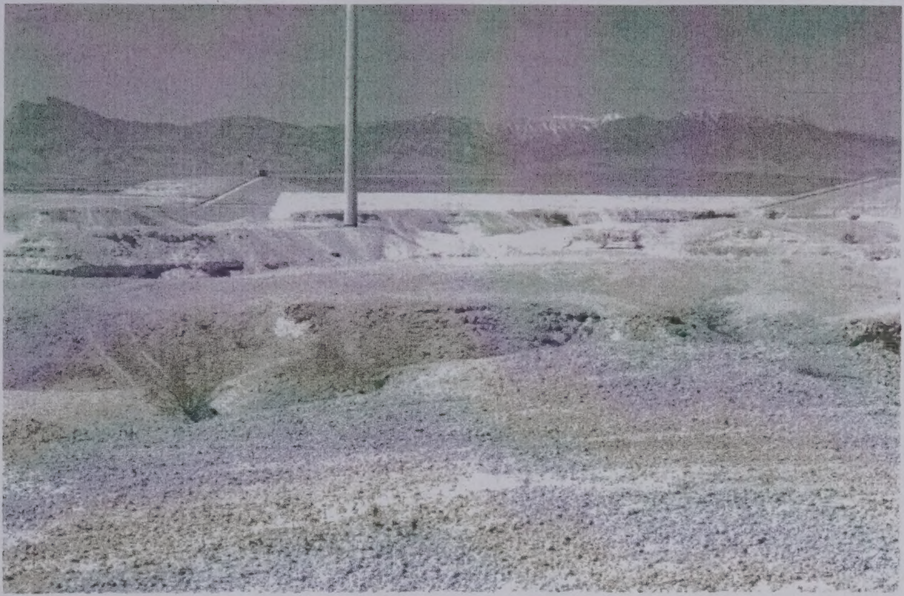


Figure 10- Public works impacts seen within the APE, view west.

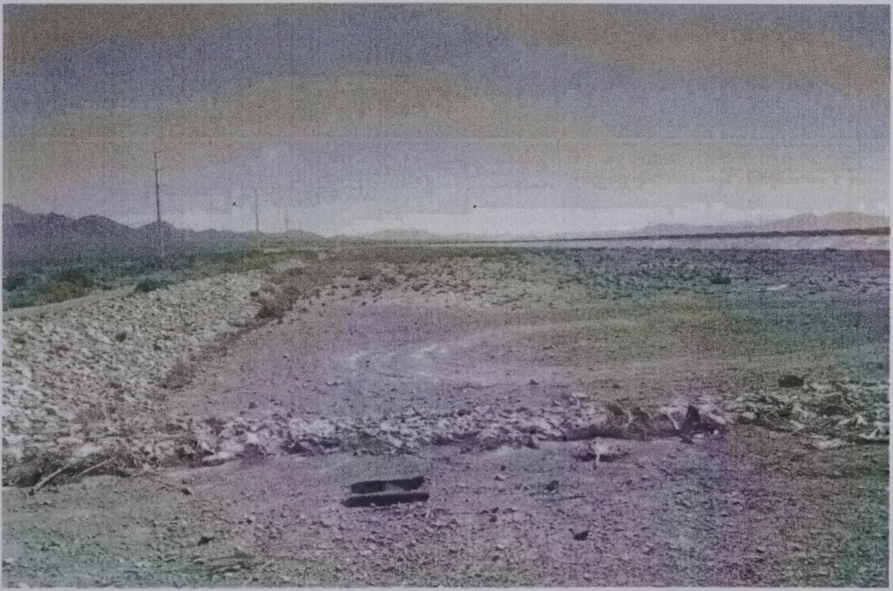
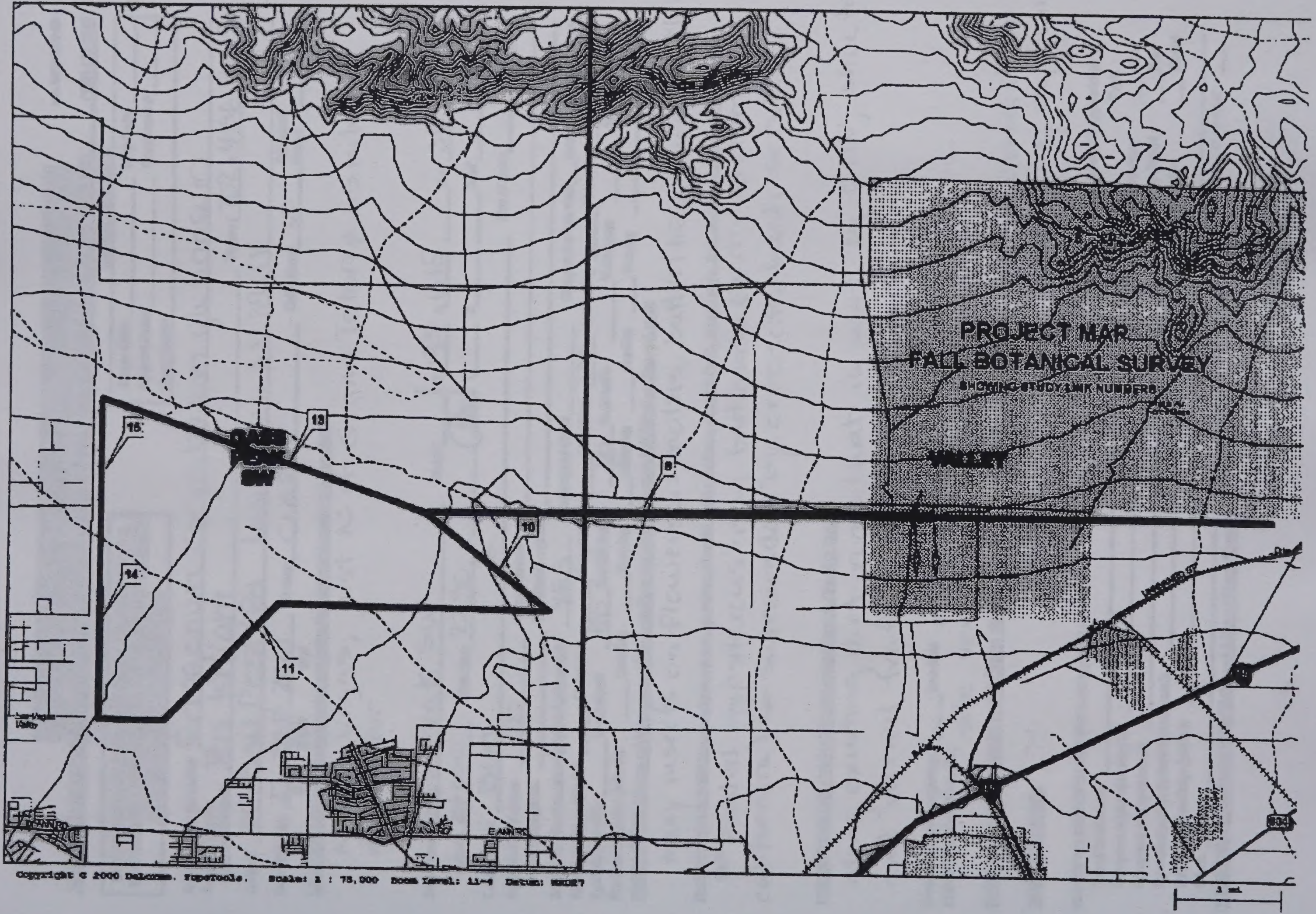


Figure 11- Public works impacts seen within the APE, view east.

FIELD SITE FORMS


PROJECT MAP
FALL BOTANICAL SURVEY
SHOWING STUDY LINK NUMBERS
VALLEY
15
13
14
10
11
8
Las Vegas Valley
E ANN RD
1 mi

Copyright © 2000 DeLorme. TopoTools. Scale: 1 : 75,000 Zoom Level: 11-4 Datum: NAD27

[redacted]

rev. [illegible]

SEND TO: NEVADA NATURAL HERITAGE PROGRAM, 1550 East College Parkway, suite 145, Carson City, NV 89706-7921 (775) 687-4245

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE ATTACH OR DRAW A MAP ON BACK.

OFFICE USE ONLY
Source Code: ______ Map Code: ______
Element Code: ______ Occurrence # ______
Copy Sent to: ______

Scientific name (no codes): Eriogonum corymbosum glutinosum
Surveyor/Reporter (incl. email if avail.): Teri Knight Phone: (702) 456 3173
Address: 3133 W Post Rd Las Vegas NV 89118
Date of Survey: 27 SEP 2001 (day month year) County: CLARK Collection #: 0 Museum/Herb.: ______

LOCATION (please attach map showing population boundaries and routes / areas searched):

NW Las Vegas, just N of Grand Teton & 1.5 mile E of Decatur

Map Name: Gass Peak SW Field #: ______ T 19S R 61E ______ ¼ of SE ¼ Sect. 8
scale=1: 24000 Elevation: 2250 to ______ [✓ ft/m] T ______ R ______ ______ ¼ of ______ ¼ Sect. ______
Land Manager: BLM Size of Area: ______
# of individuals/ramets: 20 If zero, reason: ______
# of colonies/genets: ______ If different, explain: ______
Is this a new location record (Yes/No/Unknown)?: YES a subsequent visit?: ______ Compared to last visit: ___ more ___ same ___ fewer
Phenologic Stages (plants): ______ % dormant ______ % vegetative ______ % budding 100 % flowering ______ % fruiting ______ % seeding
Age Structure (all): ______ % senescent 90 % adult/mature 10 % juvenile ______ % first-year ______ % newborn/seedling
Site Functions/Uses (animals): ______ breeding ______ foraging ______ wintering ______ roosting ______ denning ______ other

INTERACTIONS (disease, predation, competition, parasitism, symbiosis, pollination, hybridization, dispersal, etc.):

many insects on flowers -- moths, butterflies, flies, beetles

HABITAT DESCRIPTION (community dominants, associates, other rare species, moisture, substrate / soils, aspect / slope, light, air / water temperature, time, weather, etc.):

eroded gypsiferous-clay badlands (with Arctomecon californica) surrounded by creosote bush scrub.

CURRENT SITE USE / Visible Disturbances and Impacts / Possible Threats:

along existing dirt road that is used by OHV, shooters and varied traffic, and trash dumping

Overall Relative Site Quality: ______ Excellent ______ Good X Fair ______ Poor
COMMENTS ON QUALITY: site very accessible

SHOULD/COULD THIS SITE BE PROTECTED? How?: will be extirpated by growth within 3-5 yrs. Try transplanting experiments and seed collection

OTHER COMMENTS:

IDENTIFICATION OF TAXON (Fill in all applicable blanks):
Keyed in reference: ______
Compared w/photo/drawing in: ______
Compared with specimen at: ______
By another person (include below; name): ______
By personal knowledge (yes/no): YES
Other: ______

PHOTOGRAPHS (check all applicable):
Subject: Type:
______ Diagnostic feature ______ Slide
______ Whole organism(s) ______ Print
______ Habitat or site ______ Digital
Other: ______
May we obtain copies at our cost? ______

OTHER KNOWLEDGEABLE PEOPLE (Name / Address / Phone / E-mail):

[redacted]

rev. [illegible]

SEND TO: NEVADA NATURAL HERITAGE PROGRAM, 1550 East College Parkway, suite 145, Carson City, NV 89706-7921 (775) 687-4245

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU. USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE ATTACH OR DRAW A MAP ON BACK.

OFFICE USE ONLY
Source Code: ______ Map Code: ______
Element Code: ______ Occurrence #: ______
Copy Sent to: ______

Scientific name (no codes): Eriogonum corymbosum glutinosum
Surveyor/Reporter (incl. email if avail.): Teri Knight Phone: (702) 4563173
Address: 393 W Post Rd Las Vegas NV 89118
Date of Survey: 30 SEP 2001 (day / month / year) County: CLARK Collection #: — Museum/Herb.: ______
LOCATION (please attach map showing population boundaries and routes / areas searched): NW Las Vegas, in badlands N of Grand Teton, between Decatur + Commerce. See attached map

Map Name: Gass Peak SW Field #: ______ T 19S R 61E ___ ¼ of ___ ¼ Sect. 7, 8, 9
scale=1: 24000 Elevation: 2300 to ______ [✓ ft]/m T ___ R ___ ___ ¼ of ___ ¼ Sect. ___
Land Manager: BLM Size of Area: ca. 1 linear mile
# of individuals/ramets: 500-1000 If zero, reason: ______
# of colonies/genets: ______ If different, explain: ______
Is this a new location record (Yes/No/Unknown)?: Y or larger Is subsequent visit?: ______ Compared to last visit: ___ more ___ same ___ fewer
Phenologic Stages (plants): ___ % dormant ___ % vegetative ___ % budding 100 % flowering ___ % fruiting ___ % seeding
Age Structure (all): ___ % senescent ___ % adult/mature ___ % juvenile ___ % first-year ___ % newborn/seedling
Site Functions/Uses (animals): ___ breeding ___ foraging ___ wintering ___ roosting ___ denning ______ other

INTERACTIONS (disease, predation, competition, parasitism, symbiosis, pollination, hybridization, dispersal, etc.):
many pollinators - butterflies moths flies wasps. beetles all on flowers

HABITAT DESCRIPTION (community, dominants, associates, other rare species, moisture, substrate / soils, aspect / slope, light, air / water temperature, time, weather, etc.):
in eroded clay-gypsiferous badlands topography surrounded by creosote bush scrub

CURRENT SITE USE / Visible Disturbances and Impacts / Possible Threats:
OHV use, recreational shooters, proposed utility corridor

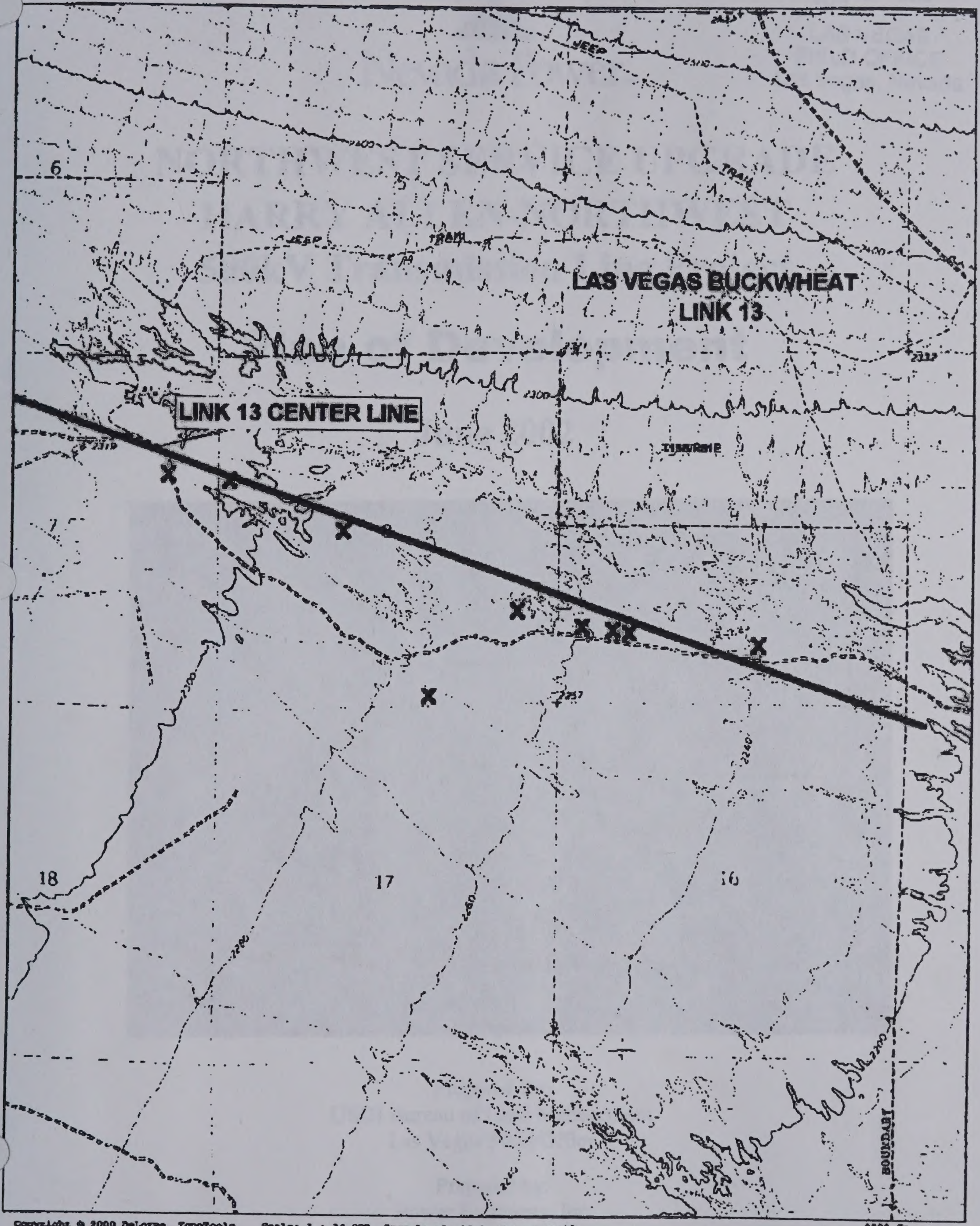
Overall Relative Site Quality: ___ Excellent ___ Good X Fair ___ Poor
COMMENTS ON QUALITY:

SHOULD/COULD THIS SITE BE PROTECTED? How?: try removing plants w/ seed for experimental transplant
OTHER COMMENTS: site will be extirpated by growth within 3 yrs

IDENTIFICATION OF TAXON (Fill in all applicable blanks):
Keyed in reference: ______
Compared w/photo/drawing in: ______
Compared with specimen at: ______
By another person (include below; name): ______
By personal knowledge (yes/no): yes
Other: ______

PHOTOGRAPHS (check all applicable):
Subject: Type:
___ Diagnostic feature ___ Slide
___ Whole organism(s) ___ Print
___ Habitat or site ___ Digital
Other: ______
May we obtain copies at our cost? ___

OTHER KNOWLEDGEABLE PEOPLE (Name / Address / Phone / E-mail):


LAS VEGAS BUCKWHEAT
LINK 13
LINK 13 CENTER LINE
JEEP
TRAIL
JEEP
TRAIL
2310
2300
2300
2319
2332
2257
2240
2250
2200
2200
2300
T19S R61E
6
5
7
8
4
2
18
17
16
BOUNDARY
2000 ft

Copyright © 2000 DeLorme. TopoTools. Scale: 1 : 24,000 Zoom Level: 13-1 Datum: NAD27

RECEIVED
Bureau of Land Management
07:30

JUN 3 2002

LAS VEGAS
FIELD OFFICE
Las Vegas, Nevada

Nevada Power℠

NORTHWEST SERVICE UPGRADE
HARRY ALLEN-NORTHWEST
500kV Transmission Line Project

Plan of Development

June 2002

Prepared for:
USDI Bureau of Land Management
Las Vegas Field Office

Prepared by:
Power Engineers, Inc

This page intentionally left blank

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

Table of Contents

List of Figures v

List of Tables v

1.0 Introduction 1
1.1 Authorizations, Permits, Reviews and Approvals 2

2.0 Facility Design 3
2.1 Harry Allen – Northwest 500kV Transmission Line 3
2.2.1 Towers 3
2.2.2 Foundations 3
2.2.3 Conductors 3
2.2.4 Insulators and Associated Hardware 4
2.2.5 Overhead Ground Wires 4
2.3 Fiber Optic Cable Specifications 7

3.0 Facility Construction 9
3.1 Overview 9
3.2 Project Compliance Plan 11
3.3 Deviations During Construction 11
3.4 Surveying Activities 12
3.5 Dust Control 13
3.6 Access Roads 13
3.7 Tower Site Clearing 15
3.7.1 Typical tower site and work area 15
3.7.2 Tower site and work area in steep/rough terrain 15
3.8 Foundation Installation 15
3.9 Construction Yards 16
3.9.1 Equipment Staging 16
3.10 Tower Assembly and Erection 16
3.11 Conductor Installation 17
3.12 Ground Rod Installation 21
3.13 Helicopter Use 21
3.14 Fiber Optic Cables 21
3.15 Site Reclamation 21
3.16 Fire Protection Plan 21

4.0 Environmental Concerns 23
4.1 Air Quality 23
4.2 Wastes, Hazardous or Solid 23
4.3 Cultural and Paleontological Resources 23
4.4 Biological Resources 26
4.4.1 Noxious Weeds 26
4.4.2 Vegetation 26
4.4.3 Wildlife 27
4.5 Wilderness Study Areas 28
5.0 Maintenance and Operation 31
5.1 Overview 31
5.2 Public and Environmental Protection 31
5.3 Dust Control 31
5.4 Abandonment 32
Appendices 33
Appendix A - Construction Schedule 35
Appendix B – Temporary and Permanent Disturbance Areas on BLM Lands 37
Appendix C - Terms and Conditions of Desert Tortoise 39
Appendix D - Native American Notifications 53
Appendix E - Structure Location Drawings 59
Appendix F - Harry Allen – Duke Plan of Development and Associated Detailed Structure Location Drawings 61

List of Figures

Figure 1-1 Harry Allen – Northwest Project Area Map 1
Figure 2-1 Typical Tangent Self-Supporting Lattice Tower Structure........ 5
Figure 2-2 Typical Tangent Steel Pole Structure 6
Figure 3-1 Typical Side Slope Road Cut 18
Figure 3-2 Foundation Installation, Tower Assembly and Tower Erection 19
Figure 3-3 Conductor Stringing........ 20

List of Tables

Table 1-1 Authorizations, Permits, Reviews, and Approvals 2
Table 2-1 Electrical Design Characteristics of the Harry Allen – Northwest 500kV Transmission Line........ 4
Table 3-1 500kV Transmission Line Construction 9
Table 3-2 Flagging Scheme........ 12
Table 4-1 Additional Project Measures 28

This page intentionally left blank

1.0 Introduction

As part of the Northwest Service Upgrade, Nevada Power Company (NPC) plans to construct a new 500kV transmission line (the Project) from the Harry Allen Substation in the Apex area to the Northwest Substation. The Project would be located north of the Las Vegas Valley in Clark County (refer to Figure 1-1). The Project consists of the following new or expanded facilities:

- A 500kV transmission line from the new Harry Allen Substation to the existing Northwest Substation (approximately 31 miles). *However, the portion between Duke and Harry Allen is on double circuit towers. This first 5 miles would be strung under the Duke right-of-way grant and is covered in Duke's Environmental Assessment and Plan of Development. Ownership of the second circuit will be transferred to NPC once energized. The Harry Allen – Duke Plan of Development is attached to this Plan of Development as reference. The portion of the transmission line from the Duke facility to the Northwest Substation (the subject of this Plan of Development) is approximately 26 miles long.*
- A fiber optic cable along the entire line for communication.
- Construction and operation of new or improved roads to each structure within the 500kV transmission line.

An environmental document (EA) was completed by the Bureau of Land Management (BLM) for the Project. NPC has completed the line survey, construction documents, environmental compliance and permitting, and has revised and updated this Plan of Development to reflect the engineering design and environmental mitigation and protection plans.

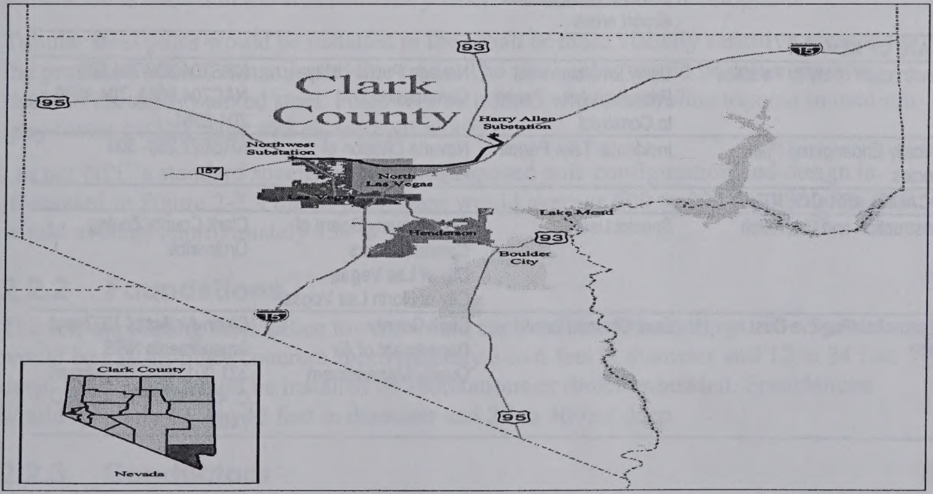


Figure 1-1 Harry Allen – Northwest Project Area Map

1.1 Authorizations, Permits, Reviews and Approvals

The Project conforms to the current Bureau of Land Management (BLM) Resource Management Plan (RMP) for the Las Vegas Field Office, as well as all other related federal, state, and local statutes, regulations, and plans. Table 1-1 documents the federal, state, and local agencies' approvals, reviews, and permitting for the transmission line.

Table 1-1 Authorizations, Permits, Reviews, and Approvals

Action Requiring Permit, Approval, or Review	Permit/Approval	Accepting authority/ approving agency	Statutory Reference
FEDERAL			
Right of Way (right-of-way) over Land Under Federal Management	Right-of-way Grant	Bureau of Land Management (BLM)	FLPMA 1976 (PL94-579) USC 1761-1771 and 43 CFR 2800
National Environmental Policy Act (NEPA) Compliance to Grant right-of-way	Environmental Assessment (EA)	BLM	NEPA, CEO 40 CFR Part 1500-et.seq.
Grant of right-of-way by BLM	National Historic Preservation Act Compliance Section 106	BLM and State Historic Preservation Office	National Historic Preservation Act of 1966, 36 CFR part 800, 16 USC 47
Grant of right-of-way by BLM	Endangered Species Act Compliance by BLM and by USFWS Biological Assessment Biological Opinion	U.S. Fish and Wildlife Service, Nevada Division of Wildlife	Endangered Species Act Section 7 Consultation, 50 CFR Part 17, 16 USC 1536
Tower location and height relative to air traffic	"No Hazard Declaration" required if structure is more than 200 feet in designated airport areas	Federal Aviation Administration (FAA)	49 USC 1501 14 CFR 77
STATE OF NEVADA			
Construction of Utility Facilities	Utility Environmental Protection Act – Permit to Construct	Nevada Public Utility Commission	NRS704.820-704.900 NAC704.9063, 704.9359 - 704-9361
Critically Endangered Plant Species	Incidental Take Permit	Nevada Division of Forestry	NRS527.260-.300
LOCAL/CLARK COUNTY			
Construction and Operation	Special Use	Clark County Board of Commissioners City of Las Vegas City of North Las Vegas	Clark County Zoning Ordinance
Construction/Fugitive Dust – PM10	Dust Control Permit	Clark County Department of Air Quality Management	Clean Air Act of 1977 and Amendments NRS 321.001, 40 CFR Subpart C, 42 USC 7408, 42 USC 7409.

2.0 Facility Design

2.1 Harry Allen – Northwest 500kV Transmission Line

The design, construction, operation, and maintenance of the Harry Allen – Northwest 500kV Transmission Line would meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor, Occupational Safety and Health Standards, and NPC's requirements for safety and protection of landowners and their property. Ground wire would be installed in addition to fiber optic cable in order to facilitate project communication needs. Electrical characteristics of the transmission line (the Project) are summarized in Table 2-1.

Based on Avian Power Line Interaction Committee recommendations (Avian Power Line Interaction Committee, 1996), adequate spacing between conductors (8' or greater based on the wingspan of female bald eagle) would be implemented. In addition, shield wires would be grounded at regular intervals and insulated hardware and conductors and non-conductive cross-arm braces will be used. Figures 2-1 and 2-1 illustrate the conductor spacing for the proposed structures.

2.2.1 Towers

Lattice towers are proposed for the first eight miles of the line. This area is rural and in rough terrain where the flexibility of lattice structure steel towers is required. The towers would be self-supporting steel lattice made of galvanized steel. The proposed single circuit tower configuration and design is illustrated in Figure 2-1. Tower-to-tower spans (ruling span) average 1,000 to 1,400 feet. Tower heights average 100 to 175 feet. The double circuit configuration, which will be used for the first five miles from Harry Allen Substation is shown in the attached Harry Allen – Duke Plan of Development.

Tubular steel poles would be installed in the urban or more visually sensitive areas along the proposed 500kV transmission line route. The steel poles would be self-supporting made of corten or painted steel. Poles will be treated with a carboline topcoat in medium gray (color #0729, paint #8819, top coat #8809)

, as per NPC's standard specification. The proposed pole configuration and design is illustrated in Figure 2-2. Pole-to-pole spans would average 600 to 800 feet. Pole heights would average approximately 130 to 160 feet.

2.2.2 Foundations

The self-supporting steel lattice towers would each require four footings. The foundations would be cast-in-place concrete approximately 3 to 6 feet in diameter and 12 to 24 feet deep. Steel poles would be installed on foundations or direct imbedded. Foundations would typically be 9 to 13 feet in diameter and 20 to 40 feet deep.

2.2.3 Conductors

The conductors for the 500kV transmission lines would consist of three phases, with a three-conductor bundle for each phase. Spacing between subconductor centers in a bundle would be an equilateral triangle 18 inches on a side. Each conductor would be aluminum stranded conductors with a steel stranded reinforced core (ACSR).

The aluminum carries the majority of the electrical current, and the steel provides tensile strength to support the aluminum strands. Minimum conductor height above the ground for the 500kV lines would be 31 feet, at 185^{0}F based on NESC and NPC's own standards. The exact height of each tower would be governed by topography and safety requirements for conductor clearance.

2.2.4 Insulators and Associated Hardware

The tangent 500kV structures would have three vertical "V" insulator strings in a horizontal configuration. The 500kV dead end structures would have three horizontal strings of insulators and hardware on each side of the tower.

2.2.5 Overhead Ground Wires

To protect the 500kV transmission lines from direct lightning strikes, two overhead ground wires, 7/16 inch in diameter, would be installed on the top of the structures. Current from lightning strikes would be transferred through the ground wires and structures into the ground.

Table 2-1 Electrical Design Characteristics of the Harry Allen – Northwest 500kV Transmission Line

Feature	Lattice Tower Description	Steel Pole Description
Line Length	Approximately 8 miles	Approximately 18 miles
Type of Structure	Self-supporting steel lattice towers	Tubular corten or painted steel poles
Structure Height	100 to 175 feet	130 to 160 feet
Span Length	1,100 to 1,400 feet average ruling span	600 to 800 feet average ruling span
Number of Structures per Mile	4 to 5	7 to 9
Permanent Right-of-Way Width	200 feet	200 feet
Voltage	525,000 volts AC	525,000 volts AC
Capacity	900 to 6000 MW	900 to 6000 MW
Circuit Configuration	Single circuit per structure, three conductor bundle per phase	Single circuit per structure, three conductor bundle per phase
Conductor Size	Lapwing 1590 kcmil ACSR/TW	Lapwing 1590 kcmil ACSR/TW
Maximum Anticipated Electric Field at Edge Right-of-Way	4 kV/m	4 kV/m
Maximum Anticipated Magnetic Field at edge	60 milli-Gauss (mG)	60 milli-Gauss (mG)
Ground Clearance of Conductor	31 feet minimum at 185°F	31 feet minimum at 185°F
Tower Foundations	Drilled piers - cast-in-place concrete	Drilled piers - cast-in-place concrete

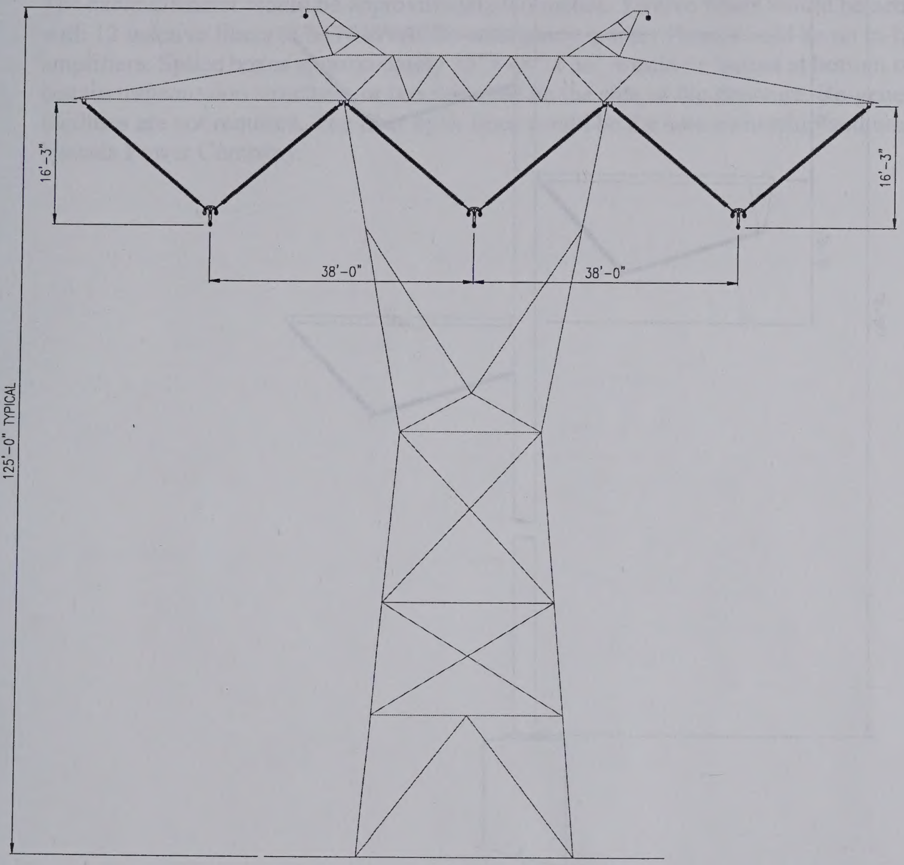

16'-3"
16'-3"
38'-0"
38'-0"
125'-0" TYPICAL

Figure 2-1 Typical Tangent Self-Supporting Lattice Tower Structure

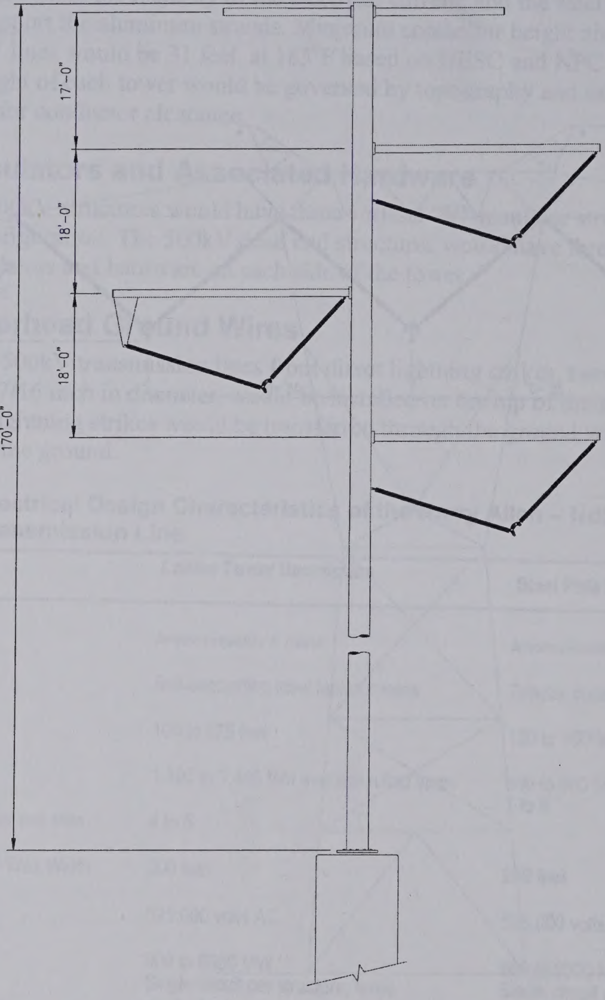


Figure 2-2 Typical Tangent Steel Pole Structure

2.3 Fiber Optic Cable Specifications

Fiber optic cable would be constructed next to the overhead static wire (lightning protection wire) along the Harry Allen - Northwest 500kV transmission line. The fiber optic system would consist of an All Dielectric Self Supporting (ADSS) cable with 24 fibers, hung aerially on the transmission structures requiring a 10-foot wide right-of-way. The cable diameter would be approximately 0.6 inches. Twelve fibers would be active with 12 inactive fibers to be reserved for emergency spares. There would be no in-line amplifiers. Splice boxes approximately 36"x 48" x 36" would be buried at bottom of certain transmission structures or box mounted on the side of the structure. Re-generation facilities are not required. The fiber optic lines would be the sole ownership and use of Nevada Power Company.

This page intentionally left blank

3.0 Facility Construction

3.1 Overview

Construction of a transmission line follows the sequence of surveying the centerline, access road construction, clearing right-of-way and tower sites (including construction yards), installing foundations, assembling and erecting the towers or installing the poles, installing ground wires and conductors, installing ground rods, and conducting cleanup and site reclamation. A table indicating disturbed areas for line and road construction is documented in Appendix B. Refer to Appendix A for a schedule of construction activities.

The number of workers and types of equipment required to construct the Project is shown on Table 3-1. Various phases of construction would occur at different locations throughout the construction process. This would require several crews operating at the same time at different locations.

Table 3-1 500kV Transmission Line Construction

Activity	People	Quantity of Equipment	
Survey	4	2	pickup truck
Road Construction	4-8	1	bulldozers (D-8 Cat)
		2	motor graders
		2	pickup trucks
		2	water trucks (for construction and maintenance)
Footing Installation	28	6	hole diggers
		2	Bulldozers
		1	Trucks
		6	concrete trucks
		-	dump trucks
		4	pickup trucks
		1	carry alls
		1	hydro crane
		1	wagon drills
Structure Steel Haul	6	4	steel haul trucks

Activity	People	Quantity of Equipment	
		-	pickup trucks
		2	yard and field cranes
		1	fork lift
Structure Assembly Per crew HA-NW= 4 Crews	8/crew	1	pickup trucks
		2	carry alls
		1	cranes (rubber tired)
		1	trucks (2 ton)
Structure Erection Per crew HA-NW= 1 Crew	6-8	1	cranes (120 Ton)
		1	trucks (2 ton)
		2	pickup trucks
		1	carry all
Wire Installation	36	6	wire reel trailers
		6	diesel tractors
		4	cranes (2 19-Ton, 2 30-Ton)
		2	trucks (5 ton)
		4	pickup trucks
		2	splicing trucks
		4	3-drum pullers (2 medium, 2 heavy)
		1	Single Drum Puller (large)
		1	Double bull-wheel tensioner (heavy)
		2	sagging equipment (D-8 Cat)
		4	carry all
		2	static wire reel trailer
Wire Clean-Up	4	3	Trucks
		1	pickup trucks
		1	(D-6 Cat)
Road Rehabilitation	4	1	bulldozers

Activity	People	Quantity of Equipment	
(Right-of-Way Restoration)		1	motor graders
		2	pickup trucks

Maximum total personnel required considering all tasks (actual personnel at any one time would be less) = 125

* including maintenance

Note: depending on schedule requirements, multiple crews may be required.

3.2 Project Compliance Plan

A right-of-way grant must be obtained from the BLM. When the right-of-way grant application has been approved, NPC shall contact the BLM Authorized Officer (AO) at least five (5) days prior to commencing construction and/or any surface disturbing activities. The AO would require and schedule a preconstruction conference with NPC prior to NPC commencing construction and/or surface disturbing activities on the right-of-way. NPC and/or their representative shall attend this conference. NPC personnel or contractors involved with construction and/or any surface disturbing activities associated with this right-of-way shall also attend this conference to review the stipulations of the grant including the Plan of Development, as applicable.

NPC would not initiate any construction or other surface disturbing activities on the public land portion of the right-of-way until after issuance of the BLM grant by the AO. Such authorization would consist of a written Notice to Proceed (Form 2800-15) issued by the AO. Any Notice to Proceed shall authorize construction or use only as expressly stated therein and only for the particular location or use therein described.

NPC shall conduct all activities associated with the construction operation, and termination of the right-of-way within the authorized limits of the right-of-way. NPC shall construct, operate and maintain the facilities, improvements and structures within this right-of-way in strict conformity with the Plan of Development that was approved and made part of the grant. Any relocation, additional construction, or use that is not in accord with the approved Plan of Development, shall not be initiated without the prior written approval of the AO. A copy of the complete right-of-way grant, including all stipulations and approved Plan of Development, shall be made available on the right-of-way area during construction, operation and termination. Noncompliance with the above would be grounds for an immediate temporary suspension of activities.

A compliance inspection contractor (CIC) will provide environmental oversight and compliance/regulatory activities for the BLM. The CIC will assist construction personnel with any environmental issues that arise as described in Section 3.3 below.

3.3 Deviations During Construction

Specific areas where disturbances would occur have been schematically identified/calculated in this Plan of Development using the best information available at this time. However, due to rough terrain conditions and access requirements which cannot be predicted until start of construction the specific areas identified could require some movement within the described project area. Terrain conditions could result in the movement of roads, structure locations, and pulling and tensioning sites within the right-of-way. Splice sites indicated on the structure location maps may also need to be moved within that span due to unforeseen construction problems such as damaged wire. Although these splice sites may shift, there will be no difference in the amount of disturbance these sites require. Disturbance calculations are not expected to change, but the shape and location of the disturbance may be different than submitted with the structure location drawings.

Minor changes that would occur will not require amending the right-of-way grant (Form 299). Minor changes include movement within the existing approved temporary and permanent rights-of-way. Avoidance areas within the approved rights-of-way (based on environmental surveys) are identified on the structure location drawings so that construction personnel will know what areas to avoid if a change is required.

Significant changes could require amending the right-of-way grant. Conducting an activity outside of the approved temporary and permanent rights-of-way could be considered significant. Upon any necessary deviation from the attached structure location drawings, NPC would notify and consult with the CIC and BLM. Any and all sensitive environmental resources would be identified and mitigated in cooperation with BLM prior to any construction activity. Discussions with BLM via the CIC would be documented, attached to the Plan of Development and submitted to BLM at completion of that particular construction activity. All changes to the Plan of Development dictated by unique field conditions or construction changes would be submitted in an "as built" format at the conclusion of construction and prior to restoration.

3.4 Surveying Activities

Construction survey work for the Project consists of determining centerline location, tower center hub, right-of-way boundaries, and tower/pole access. The survey of the centerline has been completed and structure location maps showing the associated disturbance areas are submitted with this Plan of Development.

The specified right-of-way boundaries would be generally marked at 100 to 200-foot intervals with painted laths or flags using the flagging scheme identified in Table 3-2. Closer intervals may be flagged as needed. Flagging would be maintained until final cleanup and/or reclamation is completed, after which they would be removed. At a minimum, reference stakes for all angle stations (P.I.) would be set on the right-of-way with stakes for each structure prior to construction.

Table 3-2 Flagging Scheme

Ribbon or paint colors	Meaning	What to do
Yellow and blue	tortoise burrows, protected plants or sensitive environmental areas	avoid these items/areas – do not drive vehicles or equipment near flagged items or within flagged areas
Orange and green	Joshua trees, yuccas and most cacti – these are protected species which must be transplanted	the contractor would dig up the flagged plants and deliver them to a location specified by Environmental Services
Pink	proposed structure locations	do not disturb survey stakes

Pink/white stripes	structure offsets	do not disturb survey stakes
Red	outside edge of permitted right of way or centerline if lath is marked with a CL	do not drive vehicles or equipment outside of designated corridor
Many colors	cadastral survey monument	protect in place
blue/white stripes	contractor access points, temporary work areas or wire pulling sites, access roads	verify that right of entry has been obtained before using these areas

3.5 Dust Control

Water trucks would be the primary means of dust abatement during all phases of construction. Areas of high erosion may require application of a palliative to reduce dust and prevent excess moisture on the road that may attract tortoise. Any application other than water must first be approved by BLM. In compliance with the Clark County Department of Air Quality Management (DAQM) dust permit, all roads and structure pads would be watered prior to and during all construction activities. During construction, up to six water trucks would be used throughout the project. At each structure site the disturbed soil would be watered to form a crust. Roads would be watered continuously. Speed limits of 15 miles per hour would be set and strictly enforced. Additionally, a helicopter may be utilized for a portion of the construction in order to minimize disturbance. Gravel at all the adjacent paved roadways would be utilized to prevent track-out, and all paved roads would be swept as necessary. Construction water and water used for dust control would come from the NPC Harvey Well Site, located in the Apex area and at least one more permitted source closer to the western portion of the alignment. The contractors working on the Project would truck water to the site. All project personnel would be educated on the site dust mitigation plan. A certified dust monitor, who has completed the 3-day course required by Clark County DAQM, would be on site during construction.

3.6 Access Roads

The utility corridor has many existing trails and roads in the vicinity of the Project. The project would utilize existing roads wherever feasible, thus keeping new construction to a minimum. Many of these roads have been associated with previous transmission line rights of way. Those include the alignment from the Duke Generating Plant to Grand Teton (N39815 and Nev067348). From Pecos to Revere and Jones Blvd to NW Substation, the existing access roads were associated with N42592. Existing roads used to access the project will include the gas pipeline road N54088, and dedicated or paved roads such as Range Road through Nellis, Decatur and Pecos. Where required, roads will be improved and/or new roads will be built. The roads shown on the structure location drawing are the only roads construction personnel are authorized to use.

Roads would be staked by the construction contractor. In areas of steep terrain, the centerline of the road will be staked, but the road travelway will be no greater than 20 feet. Where possible, existing roads used to access the transmission corridor and tower locations would be staked to a 24-foot width. To minimize dust, existing roads may not be bladed. Instead, construction personnel would drive outside the existing roadway and/or berm areas, but within the staked 24-foot width when necessary for passing. The roadways have been surveyed for paleontological, botanical, and biological resources, including desert tortoise and sensitive plant species prior to use.

In addition, meandering roads may be required in specific areas due to geologic conditions. Roads located between pole 21/6 and 23/7 and between 25/5 and 26/7 are subject to significant construction problems due to the soil and geologic conditions. Although these roads were surveyed and depicted on the map as precisely as possible, the roads may need to meander within the right-of-way to accommodate unforeseen structural and environmental factors. As-built maps showing these deviations will be submitted to BLM upon completion of the construction project as discussed in Section 3.3 of this Plan of Development.

A portion of the existing road network would require improvement in order to get to the transmission line corridor. This would involve clearing overgrown vegetation, re-grading, and/or installation of drainage structures. To the maximum extent possible, drainages would be crossed at grade (i.e., referred to as an Arizona crossing). Where Arizona crossings are not feasible, culverts would be constructed. Those roads are shown on the structure location drawings submitted with this Plan of Development. Because NPC would require a 24-foot access road, some existing roads would be improved from 10-12 feet to a 20-foot traveled way with 2 feet of berm on either side, or 4 feet on a single side, depending on the grading requirements at that location. These roads (with the exception of side-hill roads) would not exceed 24 feet maximum and would be flagged to identify the width of road to be used. Disturbance calculations in Appendix B used 14 feet of improved road as new permanent disturbance.

Due to rough terrain conditions, new roads that must be graded for access along steep slopes (side-hill roads) would most likely exceed a 24-foot width, varying from 24 to 100 feet wide, depending on the amount of displaced soil. Disturbance has been calculated assuming a 75-foot width. Other new roads will be required as shown on the structure location drawings submitted with this Plan of Development.

A set of structure location maps detailing the GPS location of work areas and new and existing access roads is submitted with this Plan of Development. A separate file of GPS data would be submitted in Arcview format for use in developing the Restoration Plan. Type and category of ground disturbance associated with construction are detailed in Appendix B.

Specific actions would be implemented to reduce construction impacts. Standard design techniques such as installing water bars and dips to control erosion would be included. In addition, measures would be taken to minimize impacts in specific locations and during certain periods of the year. Such conditions could arise during heavy rains or high winds. To prevent impacts during such periods, construction activities would be restricted or curtailed.

3.7 Tower Site Clearing

3.7.1 Typical tower site and work area

At each tower site, work areas are required to facilitate the safe operation of equipment, and construction operations. Within typical work areas in flat terrain, an area 150 feet by 200 feet (right of way width) of temporary disturbance would be required for equipment and construction tasks. Within that work area, the permanent disturbance associated with the tower footings would be 50 feet by 50 feet. The work area would be cleared of vegetation only to the extent necessary. Access within the work area would be overland travel with minimal to no grading required in the work site. After line construction, all work areas identified as temporary disturbance on the structure location drawings and in Appendix B would be restored in compliance with the BLM's Restoration Plan.

3.7.2 Tower site and work area in steep/rough terrain

At each tower site in rough and steep terrain, work areas required would vary depending on the site conditions. Twenty four work areas between mile marker 6/2 and 11/2 would be expanded to 250 feet by 200 feet and permanent tower sites would require two-thirds of that area to be cleared and graded for permanent disturbance to accommodate crane pads used by construction and maintenance crews. The remaining one-third of that area would be graded for temporary use during construction and restored in compliance with the BLM Restoration Plan. Extensive grading along steep slopes would be required to accommodate tower sites. Figure 3-1 shows a typical cut in the slope to accommodate roads and crane pads.

3.8 Foundation Installation

Excavations for foundations would be made with power equipment. Where the soil permits, a vehicle-mounted power auger or backhoe would be used. In rocky areas, the foundation holes may be excavated by drilling and blasting, or special rock anchors may be installed. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. The CIC and BLM will be notified in advance of any required blasting so that the area can be cleared and nearby tortoise burrows and other sensitive resources can be protected.

After excavations are completed, pre-cast or cast-in-place footings would be installed. The cast-in-place footing would be installed by placing reinforcing steel and a tower stub into the foundation hole, positioning the stub, and encasing it in concrete. Spoil material would be used for fill where suitable. The foundation excavation and installation requires access to the site by a power auger or drill, a crane, material trucks, and ready-mix trucks using the access roads indicated on the structure location drawings submitted with this Plan of Development.

Foundation holes left open or unguarded would be covered and/or fenced where practical to protect the public and wildlife. Soil removed from foundation holes would be stockpiled on the work area. These piles would be used to backfill holes and the topmost layer would be distributed over the work area. To wash concrete chutes, a hole would be dug in the center of the permanently disturbed 50 foot by 50 foot tower location site. The first six inches of topsoil would be placed on one side of the hole, and the remainder of the soil on the other side. The chute would be washed into the hole, then the soil would be replaced in the same order it was removed, thereby salvaging the seed bank.

A proposed blasting schedule would be published in the local newspaper one week prior to the blasting and a copy of the affidavit of publication provided to BLM. The schedule would identify the location, dates and times the blasting would occur. The contractor would post warning signs at all entry points for the Project, which includes blasting schedule and the audible signals to indicate, "start" and "all clear" at finish. Access points would be blocked at least 30 minutes prior to blasting to prevent access by the public. The site would be swept 5 minutes prior to any shot being put off, and an audible warning signal capable of carrying for one half mile would be used 2 minutes prior to blasting.

Blasting entails drilling up to 3 holes 3 to 10 feet deep and approximately 1 foot apart in the area to be excavated. The holes would be packed with a detonatable explosive charge. A blasting blanket would be placed over the blasting area and secured. Conventional or plastic explosives would be used. After blasting, an all-clear signal would be given, and the area would be cleared of debris. All applicable state, local and federal laws would be followed.

3.9 Construction Yards

Existing NPC property would be used to the maximum extent for construction staging and personnel reporting. This property includes the Harry Allen Generating Station materials management area, Pecos Substation, Gypsum Substation, Northwest Substation, and other NPC graveled property. Yards designated for longer-term storage of materials, such as Harry Allen Generating Station, would be fenced and gated as required. A tortoise-trained security guard would monitor access in and out of the yard as required (Appendix C). Concrete for use in constructing foundations would be available from commercial sources in the Las Vegas area; therefore, no remote batch plants would be anticipated.

3.9.1 Equipment Staging

Staging of equipment would be located at pulling and tensioning sites or work areas previously described to receive temporary disturbance. These areas would be used to temporarily lay out equipment to be used for work on specific project activities at nearly locations. No construction yards would be located within the right-of-way.

3.10 Tower Assembly and Erection

Bundles of steel members and associated hardware would be shipped to each tower site by truck. Steel members would be assembled into subsections of convenient size and weight. The assembled subsections would be hoisted into place by a large crane and then fastened together to form a complete tower (Figure 2-1). Table 3-2 lists the equipment and personnel necessary for tower assembly and erection.

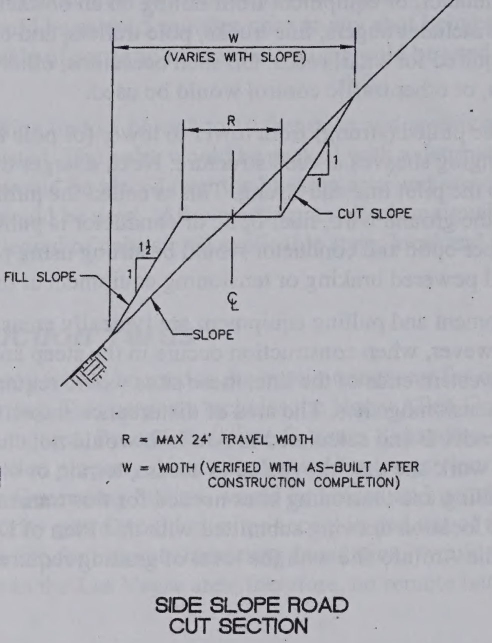
3.11 Conductor Installation

After the towers and poles are erected, insulators, hardware, and stringing sheaves would be delivered to each tower site. The towers and poles would then be rigged with insulator strings and stringing sheaves at each ground wire, fiber optic and conductor position (Figure 3-3). For public protection during wire installation, guard structures would be erected over highways, railroads, power-lines, structures, and other obstacles. Guard structures consist of H-frame poles placed on either side of an obstacle. These structures prevent ground wire, conductor, or equipment from falling on an obstacle. Equipment for erecting guard structures includes augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads. On such occasions, other safety measures such as barriers, flagmen, or other traffic control would be used.

Next, a pilot line would be pulled (strung) from tower to tower (or pole to pole) and threaded through the stringing sheaves at each structure. Next, a larger diameter, stronger line would be attached to the pilot line and strung. This is called the pulling line. This process is repeated until the ground wire, fiber optic or conductor is pulled through all sheaves. Ground wire, fiber optic and conductor would be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end.

Sites for tensioning equipment and pulling equipment are typically areas approximately 200 feet by 700 feet. However, when construction occurs in the steep and rough terrain found at the eastern and western ends of the line, these sites would require larger, less symmetrical pulling and tensioning sites. The area of disturbance shown on the disturbance table in Appendix B and calculated in Arc Info would not change, but the shape and location of the work site may move due to access, terrain or other environmental issues. Pulling and tensioning sites needed for this transmission line are identified on the structure location drawing submitted with this Plan of Development. Each site is identified in the ArcInfo file with the level of grading required, D3.

Harry Allen – Northwest 500 kV Transmission Line Project
Plan of Development


W
(VARIES WITH SLOPE)
R
1
1
CUT SLOPE
1½
1
FILL SLOPE
℄
SLOPE
R = MAX 24' TRAVEL WIDTH
W = WIDTH (VERIFIED WITH AS–BUILT AFTER CONSTRUCTION COMPLETION)
SIDE SLOPE ROAD CUT SECTION

[redacted]

BOI 24-270 148890-02 (5/1/2002) at

Figure 3-1 Typical Side Slope Road Cut

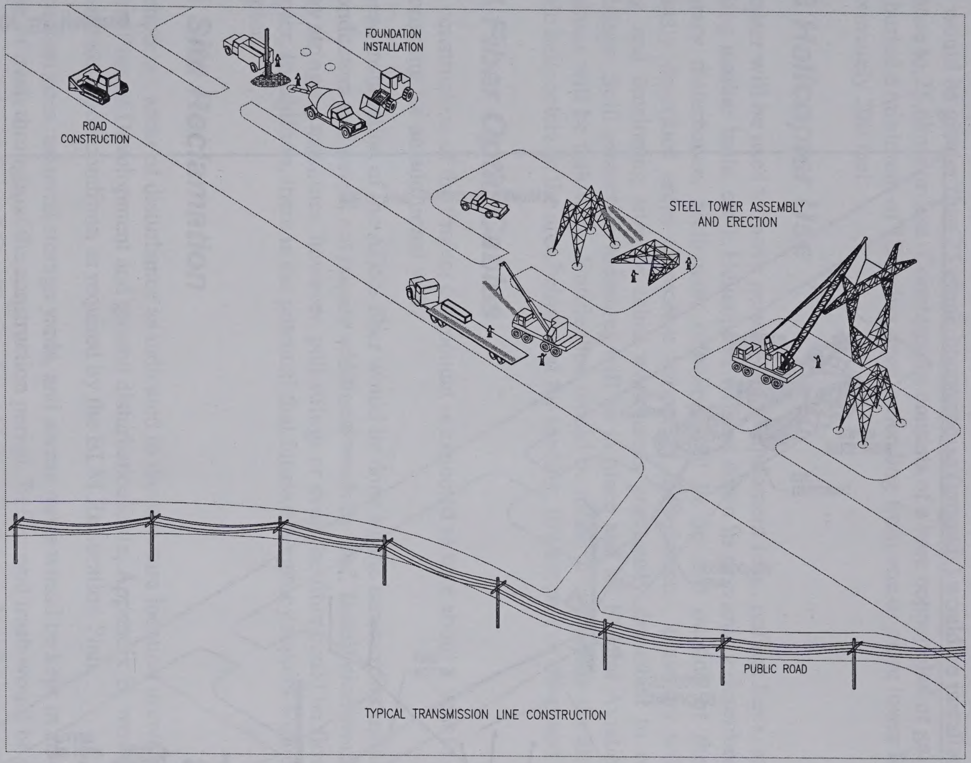

FOUNDATION INSTALLATION
ROAD CONSTRUCTION
STEEL TOWER ASSEMBLY AND ERECTION
PUBLIC ROAD
TYPICAL TRANSMISSION LINE CONSTRUCTION

Figure 3-2 **Foundation Installation, Tower Assembly and Tower Erection**

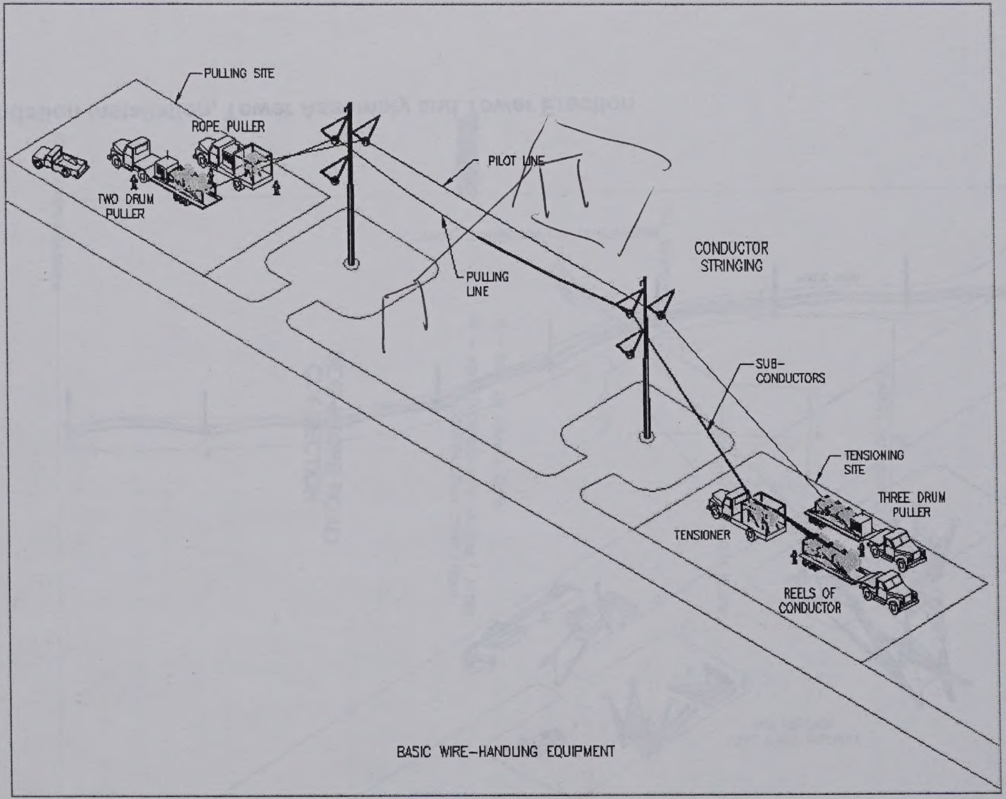

PULLING SITE
ROPE PULLER
TWO DRUM PULLER
PILOT LINE
PULLING LINE
CONDUCTOR STRINGING
SUB-CONDUCTORS
TENSIONING SITE
THREE DRUM PULLER
TENSIONER
REELS OF CONDUCTOR
BASIC WIRE-HANDLING EQUIPMENT

Figure 3-3 Conductor Stringing

3.12 Ground Rod Installation

As a part of standard construction practices, prior to wire installation, tower footing resistance along the route would be measured. When the resistance to remote earth for each transmission tower would be greater than 25 ohms, counterpoise (grounds) would be installed to lower the resistance to 25 ohms or less. Counterpoise consists of a bare copper clad or galvanized steel cable buried a minimum of 12 inches deep, extending from one or more tower legs for approximately 200 feet.

3.13 Helicopter Use

Helicopter will be used to move personnel and equipment (e.g., pulling lines, assembling towers, installing marker balls, etc.). Helicopters will set down in previously described areas to receive temporary disturbance. Helicopter refueling will be in and outside of the right-of-way in previously described areas to receive temporary disturbance. Travelers will be dropped on pulling and tensioning sites or other work areas previously described to receive temporary disturbance. Spill protection measures will be in place and all Federal Aviation Administration regulations will be followed. Notification would be made to coordinate the air space with other possible helicopters in the area being used for seeding, fire support or other use.

3.14 Fiber Optic Cables

Initial construction of the Project component is expected to take about 1 year to complete with work ongoing for an additional year.

Overhead installation of the ADSS fiber would be done by the same crews installing the power line conductors and would not require additional roads or land. Installation would most likely be done by stringing machines, however, pull strings or even the fiber could be flown in by helicopter. In addition, there is the potential that future emergency repairs would be done by helicopter.

3.15 Site Reclamation

The temporary areas of disturbance as indicated in the structure location drawings submitted with this Plan of Development and ground disturbance table, Appendix B, would be restored to its pre-construction condition as required by the BLM Restoration Plan.

Construction sites, material storage yards, and access roads would be kept in an orderly condition and free of trash throughout the construction period. Refuse and trash would be collected at the temporary construction yards (pulling and tensioning sites) in a closed container until removed from the sites and disposed of in an approved manner. Oils and fuels would not be dumped along the line. Waste oils or chemicals would be hauled to an approved site for disposal.

3.16 Fire Protection Plan

All federal, state, and county laws, ordinances, rules, and regulations, which pertain to prevention, presuppression, and suppression of fires, shall be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations. It shall be the responsibility of the construction contractor to notify the BLM when a project related fire occurs within or adjacent to the construction area.

The contractor shall be responsible for any fire started, in or out of the project area, by its employees or operations during construction. The contractor would be responsible for fire suppression and rehabilitation. The contractor would take aggressive action to prevent and suppress fires on and adjacent to the project area, and would utilize its workers and equipment on the project for fighting fires within the project area.

When fire suppression is the responsibility of the BLM, current BLM standard fire fighting rates for labor would be used. Equipment would be paid for at negotiated rates established in BLM GAT rental agreement contracts for the particular working season. The BLM may call on the contractor's workers and equipment in emergencies for fires outside the project area. Payment would be made in a similar manner to that above.

Costs involved with contractor-caused fires would be charged to the contractor. There would be no extension of time for line construction for delays caused by contractor-related fires. Specific construction-related activities and safety measures would be implemented during construction of the transmission line in order to prevent fires and to ensure quick response and suppression in the event a fire occurs. These activities and requirements include:

- All vehicles must stay on designated roads or park in areas free of vegetation. Vehicles, including the undercarriages, will be thoroughly washed prior to entering the site.
- The contractor would provide and store in a place easily accessed at each construction site five shovels, two backpack pumps with water, and one five-pound ABC dry powder CO fire extinguisher during all construction activities.
- Contractor would have notification numbers (Table 3-3) readily available for all employees in case of fire.

Table 3-3 Fire Notification Numbers

Contact Person	Phone Number
Bureau of Land Management	
Fire Dispatch	702-631-2300
Authorized Officer (Jacqueline Gratton)	702-515-5054
Construction Manager	☎

☎ **Number would be provided after award of contract.**

4.0 Environmental Concerns

4.1 Air Quality

Emissions produced during grading and construction are of short-term duration and would cease upon completion of construction. Dust would be minimized by application of water to disturbed areas. A dust permit (as identified in Table 1-1) issued by the Department of Air Quality Management would be obtained prior to start of construction. Construction would comply with all the requirements of that dust permit.

4.2 Wastes, Hazardous or Solid

The contractor would comply with applicable laws pertaining to proper usage and disposal of potentially hazardous materials. No hazardous materials would be used on the right-of-way. Trash and solid waste generated from construction activities would be stored in closed containers and disposed of in accordance with regulatory requirements. Any spills would be immediately reported to the CIC and NPC construction inspectors so that cleanup can be implemented immediately. NPC would notify the appropriate authorities if a spill occurred. All spill materials would be labeled and stored at a NPC designated facility off the right-of-way for accumulation and disposal.

4.3 Cultural and Paleontological Resources

Cultural resources are defined as buildings, sites, structures, or objects, each of which have historical, architectural, archeological, cultural, and/or scientific importance. Numerous laws, regulations, and statues, on both the federal and state levels, seek to protect and target the management of cultural resources. Both archeological and paleontological Class III inventories were conducted in the Area of Potential Effect (APE) for Harry Allen – Northwest Transmission Line (the Project) as delineated in the attached structure location drawings.

Much of the northeastern portion of the APE had been previously inventoried in association with prior projects, leaving a total length of 19.4 miles to be surveyed by Knight Leavitt and Associates (KL&A). KL&A performed a cultural resources Class III inventory of the proposed APE. In addition, San Bernardino County Museum (SBCM) conducted a Class III paleontological inventory throughout the APE. Surveys were performed in all potential construction areas as identified on the structure location drawings submitted with this Plan of Development.

During the course of the KL&A inventory, a total of three cultural resource sites were recorded, two new and one previously recorded. The SBCM inventory identified 23 new paleontological localities. Effects to these properties/localities would be mitigated through the development and implementation of a treatment/testing plans for data recovery. Both Plans are being submitted for approval by the BLM. The Cultural Resources Testing Plan will also being submitted to the State

Historic Preservation Office (SHPO) for approval. Pending the results of the Cultural Resources Testing Plan, broader data recovery prescriptions may be determined necessary.

Construction activities in areas where these sites/localities have been recorded (as identified below) would not occur until mitigation has been completed and Stan Rolf, BLM District Archeologist, in consultation with the SHPO, gives approval. Refer to the right-of-way grant for stipulations associated with these identified cultural resource areas. Construction activities may occur in all other areas as identified on the structure location drawings submitted with this Plan of Development.

In addition, areas which demonstrate high potential for buried paleontological and/or cultural resources shall be identified to the CIC for monitoring during construction. NPC would notify Stan Rolf and would have an archeological and/or paleontological monitor (per Stan Rolf's guidance) on site before conducting construction activities in those specific areas.

Appropriate Native American groups (Appendix D) have been notified of the Project and pending mitigation. Their concerns would be addressed prior to initiating the treatment of the site.

The newly recorded historic properties include one prehistoric chipping station (26CK6571), and a group of structures associated with the Las Vegas Army Air Field Gunnery School (26CK6572). The previously recorded site encountered, and subsequently re-evaluated, is a railroad grade segment attributed to the Las Vegas & Tonopah Railroad system (26CK1649). In addition, several isolates were also encountered along the APE. Listed below is a more detailed summary of each.

Newly Recorded Sites:

26CK6571: Site 26CK6571 is located in Township 19 S, Range 60 E, Section 2, Aliquot NE, NW, NW. This site is a small chipping station situated on a low gravel terrace overlooking a wash in the northern Las Vegas Valley. This small, surface site is determined not eligible for nomination to the NRHP.

26CK6572: Site 26CK6572 is located in Township 19 S, Range 62 E, Section 17, Aliquot NE, NE, NE. This site consists of four building foundations that were part of the aerial gunnery training range complex built during WWII for the Las Vegas Army Gunnery School. Feature 1 is an almost rectangular concrete foundation, made on two levels. There are two railroad rails imbedded in the floor of the first level. Feature 2 is another rectangular concrete foundation, made on two levels. There are no railroad rails imbedded in this foundation. Feature 3 is a simple rectangular pad, 30' X 15'. It was poured in a single section. Feature 4 is another simple rectangular pad, 22'9" X 16'. It was poured in three sections of equal size. Site 26CK6572 is determined not eligible for nomination to the NRHP.

Historic Isolates: There were a variety of historic artifacts found within the five miles between the complex pull zone and the boundary for the Nellis Air Force Base Small Arms Range. This portion of the APE is located between Section 15 in T19S, R61E and Section 18 in T19S, R61E.

Prehistoric Isolate: This is an isolated prehistoric artifact located in NE¼, NW¼, NE¼ of Section 15, T19S/R61E. It is a single rhyolitic core found situated at the top of a twenty-foot high escarpment along a wash. A surface survey of the surrounding area did not produce other artifacts in the near vicinity.

Based on the consultation results, the expectation for encountering cultural resources within the APE was high. This was established by considering the number of previously recorded sites located within the project area, as well as the right-of-way passing through the Tule Springs National Register Site. However, during the course of the fieldwork, only one previously recorded site (26CK1649) was relocated. **This site is located in Township 19 S, Range 60 E, Section 5, Aliquot NW.** This site was previously determined not eligible for nomination to the NRHP. The absence of all other previously recorded sites is attributed to the heavy ORV use in the area.

The 23 paleontological localities recorded are identified below.

TAXA	SITE_TYPE	TOWER_ID	MISC
Mammoth tusk in situ & inverts	Site		Between 157 & 158 staked along N ROW
Bone fragment	Site		SW153 staked
Bone frags, burnt wood , gastr	Site		60 feet WNW tower 154 staked
Bone fragments	Site		Between 156 and 157 staked
Bone frags, gastropods	Site		15-30 feet S of S access road, near tower 154 stak
Large mammal rib and vert in s	Site		200 feet E tower 132 staked
Mammoth tooth and bone frags,	Site		50 feet SE of tower 131 staked
Camel tooth frag (float)	Site		Center of ROW 20+ feet E tower 132 staked
Mammoth tooth frag (float)	Site		Center of ROW 200+ feet E tower 132 staked
Juv Mammoth jaw & inverts	Site		Near S ROW
Tooth enamel	Site		Center of ROW 200+ feet E tower 133 staked
Camel bone frags	Site		
Camel tooth (float)	Site		
Mammoth tusk frags	Site		65 feet from tower 137 staked centerline of ROW
Camel tooth frag	Site		Between towers 136 & 137 staked 75 feet N of N edg
Large mammal bone frag in situ	Site		
Elephant tusk frag	Site		
Bone in situ	Site		
Large mammal tibia	Site		50 feet SW tower 138 staked
Tooth frag	Site		20 feet S tower 138 staked
Camel tooth frag (float)	Site		

	Tower	201	
	Tower	197	
	Tower	169	
	Tower	168	
camelid tooth, gastropods	Site		Near tower 150 staked, pull area
	Tower	145	
	Tower	144	
	Tower	143	
	Tower	141	
artiodactyla vertebra	Site		Between towers 137 and 138 staked
	Tower	130	
	Tower	128	

4.4 Biological Resources

4.4.1 Noxious Weeds

When noxious weeds are encountered during construction, mitigation measures would be instituted in consultation with the Authorized Officer. Construction equipment, materials, and vehicles would enter the site clean and would be stored within the right-of-way and designated areas.

4.4.2 Vegetation

Cactus and yucca present in the access roadway and work areas area would be transplanted out of harms way but within the right-of-way in accordance with the BLM Restoration Plan prior to the start of construction. State threatened species (Las Vegas bearpoppy) have been identified in the project area and are shown on the structure location drawings submitted with this Plan of Development. A permit from Nevada Division of Forestry would be procured to cover the take of any critically endangered plants or habitat. Specific mitigation for the Las Vegas bearpoppy and Las Vegas Valley buckwheat will be identified in BLM's Restoration Plan. These habitats would be flagged and avoided wherever possible. To minimize impacts to these rare plants and their habitat, where disturbance from grading roads or work areas other than overland travel occur, the top three to six inches of top soil would be removed and stockpiled according to the Nevada Division of Forestry permit and BLM's Restoration Plan. This stockpiled topsoil would be spread over the temporary disturbance areas and/or the work areas not permanently disturbed.

Roads and structure locations are designed and located to avoid the patches of mesquite and acacia identified on the structure location drawings. Mesquite and acacia would be flagged to prevent vehicle and equipment from having access to those areas. Roadways would be flagged to indicate where construction traffic will travel.

4.4.3 Wildlife

Birds

If nests or young burrowing owls are observed during construction, the area would be marked and the Authorized Officer would be notified immediately. No work would be conducted in the vicinity of any such burrowing owl nests. Phainopepla habitat is associated with mesquite and acacia stands. Many birds were identified during the survey period so mitigation measures include design of structures to avoid those areas, and flagging work areas associated with mesquite with yellow and blue lath, indicating that vehicles and equipment cannot drive near or within these areas.

As discussed in Section 2.0, based on Avian Power Line Interaction Committee recommendations (Avian Power Line Interaction Committee, 1996), adequate spacing between conductors (8' or greater based on the wingspan of female bald eagle) will be implemented. In addition, shield wires will be grounded at regular intervals and insulated hardware and conductors and non-conductive cross-arm braces will be used. Figures 2-1 and 2-1 illustrate the conductor spacing for the proposed structures. Pole structures will be used for approximately 20 miles of the 31-mile transmission line. Lattice towers will be used for areas of complex terrain, such as found in the eastern portion of the plan area. Although birds that prey on tortoise utilize lattice towers, the portion of the transmission line where lattice towers are used is in a corridor where there do exist transmission structures.

Desert Tortoise

The Harry-Allen Northwest project qualifies for coverage under two programmatic biological opinions and is required to comply with the terms and conditions (Appendix C). The 1997 Programmatic Biological Opinion for Section 7 consultation covering multiple use activities impacting desert tortoise habitat within the Las Vegas Field Office District (File No. 1-5-97-F-251) contains stipulations for mitigating impacts to tortoise in moderate density habitat and the 1996 Programmatic Biological Opinion for Section 7 consultation on the implementation of the Las Vegas District Resource Management Plan within the Las Vegas Valley (File No. 1-5-96-F-23R.2). Refer to Appendix C of this Plan of Development for the terms and conditions that must be adhered to for the desert tortoise.

Gila Monster

A qualified biologist in accordance with NDOW protocols would handle any encounters with a gila monster.

Other Wildlife

Construction personnel will notify the CIC of any other wildlife (e.g., snakes) encountered on the project site. The CIC will be responsible for relocating such wildlife, as necessary.

Vegetation and Erosion Protection Plan

Areas of temporary disturbance would be restored to its pre-construction condition in accordance with the BLM Restoration Plan. Permanent disturbance would be maintained for operation and maintenance of the transmission line.

4.5 Wilderness Study Areas

In compliance with the Federal Land Policy and Management Act (FLPMA), BLM evaluated lands within their planning area for the presence of wilderness characteristics. A Wilderness Study Area (WSA) is a roadless area that has been found to have wilderness characteristics. Lands identified through the inventory process as WSAs, are managed according to *the Interim Management Policy for Lands under Wilderness Review* (IMP), BLM Manual H-8550-1. Management according to these guidelines requires non-degradation of wilderness values and, thus, imposes constraints on the types of activities that can occur in WSAs. Under interim management, the only permitted activities are temporary uses that create no new surface disturbance or do not involve permanent placement of structures.

Although not crossed by the proposed Harry Allen-Northwest 500kV transmission line, the southern boundaries of two BLM WSAs (Quail Springs and Nellis ABC) are located immediately adjacent to the project. To ensure that these WSAs are not physically impacted by the project, the following mitigation/measures will be employed:

1. Survey and identify the Quail Springs WSA and Nellis ABC WSA boundaries near the project.
2. Place WSA boundary markers to clearly indicate the location of the two WSA's.
3. During the pre-construction meeting, construction personnel will be made aware of WSA boundary locations and restrictions imposed upon these WSAs.

Table 4-1 Additional Project Measures

1. Construction vehicle movement would be restricted to designated access, or public roads.
2. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
3. Overhead static wires would be marked with highly visible devices where required by governmental agencies
4. The transmission line would be regularly patrolled and properly maintained in compliance with applicable safety codes.
5. New roads would be built at right angles to washes to the extent practicable. Construction and maintenance activities would be conducted to minimize disturbance to vegetation and drainage channels. Existing roads would be left in or restored to a condition equal to or better than their condition prior to construction.

6. The appropriate dust permits would be obtained prior to construction. Roads and disturbed areas would be regularly watered to minimize dust. Open burning of construction trash would not be allowed.
7. Fences and gates would be repaired or replaced to their original condition if they are damaged by construction activities.
8. Hazardous materials would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials. No debris of any kind would be deposited in or on the right-of-way.
9. Nonspecular conductors would be used to reduce visual impacts.
10. To minimize disturbance in designated areas, structures would be placed to avoid certain features such as, but not limited to, sensitive wildlife and plants (e.g., mesquite/acacia woodlands, bearpoppy and kit fox dens).

This page intentionally left blank

5.0 Maintenance and Operation

5.1 Overview

NPC would maintain the right-of-way as required by BLM stipulations. When the line is no longer needed, NPC would submit and implement a reclamation plan subject to BLM approval.

The nominal voltage for the Harry Allen – Northwest Transmission Line would be 500kV AC. There may be minor variations of up to five percent above the nominal level depending upon load flow. After the transmission lines have been energized, land uses that are compatible with safety regulations would be permitted in and adjacent to the right-of-way. Existing land uses, such as recreation, are generally permitted within the right-of-way. Incompatible land uses within the right-of-way include construction and maintenance of inhabited dwellings, and any use requiring changes in surface elevation that would affect existing or planned facilities. Land uses that comply with local regulations would be permitted adjacent to the right-of-way. Compatible uses of the right-of-way on public lands would have to be approved by the BLM.

5.2 Public and Environmental Protection

Safety is a primary concern in the design of this 500kV transmission system. An AC transmission line would be protected with power circuit breakers and related line relay protection equipment. If conductor failure occurs, power would be automatically removed from the line. Lightning protection is provided by overhead ground wires along the line. All fences and metal gates crossing within the transmission line right-of-way would be grounded to prevent electrical shock.

The transmission line would be inspected on a regular basis by both ground and air patrols. Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, the sponsors would adhere to the same precautions that were taken during the original construction.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damage. Crews would be instructed to protect plants, wildlife, and other resources of significance. Restoration procedures following completion of repair work would be similar to those prescribed for normal construction using the BLM's Restoration Plan. The comfort and safety of local residents would be provided for by limiting noise, dust, and the danger caused by maintenance vehicle traffic.

5.3 Dust Control

Dust control during maintenance of the transmission line would be managed the same as during construction. Refer to the dust control discussion in Section 3.5 of this Plan of Development for details. The transmission line would be patrolled twice per year for maintenance, once by helicopter and once by driving patrol. Monitoring and maintenance would be done from all approved or existing access roads. Maps would be provided to maintenance crews for subsequent entry into berm/boulder access roads. When access into the tower/pole locations needs improvement, a dozer blade would be used. Maintenance crews would be required to re-scarify and restore, to its pre-existing condition, any disturbance to the access roads. Any berms or boulders that were in place would also be restored after completion of the maintenance work.

5.4 Abandonment

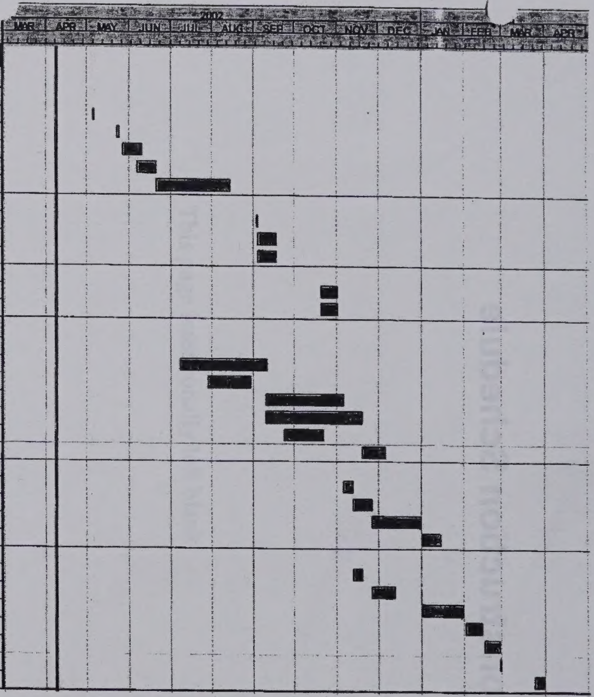
At the end of the useful life of the Project, if the facility were no longer required, the transmission line would be abandoned. Subsequently, conductors, insulators, concrete pads, and hardware would be dismantled and removed from the right-of-way. Tower and pole structures would be removed and foundations broken off below ground surface. All permanent disturbances would be restored.

Appendices

This page intentionally left blank

Appendix A - Construction Schedule

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
TL234 HARRY ALLEN-NORTHWEST 500kV LINE				
FOUNDATION CONSTRUCTION				
BLM				
IQHNW6203	Receive Dust Permit	1	08MAY02	08MAY02
IQHNW6202	Receive BLM NTP	1	24MAY02	24MAY02
IQHNW6205	Transmission Survey & Staking (BLM)	10	28MAY02	10JUN02
IQHNW6210	OH Mobilization (BLM)	10	07JUN02	20JUN02
IQHNW6220	Drill Holes & Foundation Construction (BLM)	37	21JUN02	13AUG02
Private				
IQHNW6201	Receive Final ROE (Private)	1	03SEP02	03SEP02
IQHNW6206	Transmission Survey & Staking (Private)	10	04SEP02	17SEP02
IQHNW6221	Drill Holes & Fdn Construction (Private)	10	04SEP02	17SEP02
Tule Springs				
IQHNW6207	Transmission Survey & Staking (Tule)	10	21OCT02*	01NOV02
IQHNW6222	Drill Holes & Fdn Construction (Tule)	10	21OCT02	01NOV02
OH LINE CONSTRUCTION				
BLM				
IQHNW6110	Assemble Towers (BLM)	46	08JUL02	10SEP02
IQHNW6111	Erect Towers (BLM)	24	29JUL02	29AUG02
IQHNW6114	Assemble Poles (BLM)	41	10SEP02	06NOV02
IQHNW6120	String Conductor & Shield Wire (BLM)	50	10SEP02	19NOV02
IQHNW6115	Erect Poles (BLM)	20	24SEP02	21OCT02
IQHNW6121	String Fiber (BLM)	10	20NOV02	05DEC02
Private				
IQHNW6112	Assemble Poles (Private)	4	06NOV02	12NOV02
IQHNW6113	Erect Poles (Private)	10	13NOV02	26NOV02
IQHNW6122	String Conductor & Shield Wire (Private)	21	27NOV02	31DEC02
IQHNW6123	String Fiber (Private)	10	02JAN03	15JAN03
Tule Springs				
IQHNW6117	Assemble Poles (Tule)	5	13NOV02	19NOV02
IQHNW6118	Erect Poles (Tule)	10	27NOV02	12DEC02
IQHNW6126	String Conductor & Shield Wire (Tule)	21	02JAN03	31JAN03
IQHNW6127	String Fiber (Tule)	10	03FEB03	14FEB03
IQHNW6179	End to End Tests	10	17FEB03	27FEB03
IQHNW6180	In Service 03-01-03	1	28FEB03	28FEB03
IQHNW6181	Release Retention	5	25MAR03	31MAR03



Start Date	01JUL96
Finish Date	23AUG04
Data Date	09APR02
Run Date	02MAY02 17:02

▬ Early Bar
▬ Progress Bar
▬ Critical Activity

© Primavera Systems, Inc.

MAST
Sheet 1 of 1

NEVADA POWER COMPANY

HA-NW 500kV

CONSTRUCTION ONLY

Date	Revision	Checked	Approved

Appendix B – Temporary and Permanent Disturbance Areas on BLM Lands

Disturbance Type	Permanent Disturbance (in acres)	Temporary Disturbance (in acres)		In Valley	Out Valley
		D-1	D-3		
Work Area		68.11	17.17	61.31	23.96
Work Area with Crane Site (2/3 Permanent, 1/3 D3)	19.22		9.59		28.81
Splice Site			2.07	1.38	.69
Tower pad sites	9.23			5.56	3.67
Guard Structures			.92	.92	
Pulling/Tensioning Site In ROW			26.87	17.14	9.73
Pulling/Tensioning Site Outside ROW			59.01	39.06	19.95
Improve Existing Road In ROW	3.69			3.29	.40
Improve Existing Road Outside ROW	6.38			4.27	2.11
New Road In ROW	34.96			16.37	18.59
New Road Outside ROW	25.29			3.31	21.98
Total Disturbance	**98.77**	**68.11**	**115.63**	**152.61**	**129.89**
Use Existing Road in ROW Not used for disturbance calculation	7.69				
Use Existing Road outside ROW Not used for disturbance calculation		66.61			

In compliance with desert tortoise biological opinions 152.61 acres of new disturbance are in Valley and 129.89 acres of new disturbance are out of Valley.

Disturbances are based on GPS data.

This page intentionally left blank

Appendix C - Terms and Conditions of Desert Tortoise

The Harry-Allen Northwest project qualifies for coverage under two programmatic biological opinions and is required to comply with the terms and conditions of each. The 1997 Programmatic Biological Opinion for Section 7 consultation covering multiple use activities impacting desert tortoise habitat within the Las Vegas Field Office District (File No. 1-5-97-F-251) contains stipulations for mitigating impacts to tortoise in moderate density habitat and the 1996 Programmatic Biological Opinion for Section 7 consultation on the implementation of the Las Vegas District Resource Management Plan within the Las Vegas Valley (File No. 1-5-96-F-23R.2).

The following regulations provide project specific guidance for compliance with those terms and conditions.

Regulations for All Phases of the Project

- All appropriate NDOW and FWS permits must be obtained prior to initiation of the project.
- A speed limit of 25 mph is required on the project site at all times.
- All workers will check underneath all vehicles before moving them.
- All vehicle traffic will be restricted to existing access roads. New access roads will be created only when approved by the Bureau. Routes for new access roads will be flagged by the tortoise biologist prior to surface disturbance.
- Litter control will be implemented and enforced. This includes the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Vehicles hauling trash must be secured to prevent litter from blowing out along the road.
- Overnight parking and storage of equipment and materials, including stockpiling, shall be within previously disturbed areas or within areas cleared by a tortoise biologist to minimize habitat destruction.
- Project activity areas will be clearly marked or flagged at the outer boundaries before the onset of construction. All activities shall be confined to designated areas. Blading of vegetation will occur only to the extent necessary and shall be limited to areas designated

- for that purpose by the Bureau or tortoise biologist.

- Desert tortoises encountered experiencing heat stress will be placed in a tub, by a qualified tortoise biologist, with one inch of 76-90° F water for several hours, until heat stress symptoms are no longer evident.

- The Bureau wildlife staff (702/515-5000) and Service (702/515-3230) must be notified of any desert tortoise death or injury due to the project implementation by close of business on the following work day.

- An independent 3rd party contractor will be hired to oversee compliance with the stipulations of this project. All questions or concerns regarding compliance shall be directed to the Bureau through this 3rd party compliance contractor.

Regulations Applicable Prior to Ground Disturbing Activities:

- Prior to issuance of the right-of-way grant or notice to proceed, and prior to any surface-disturbing activity associated with the proposed project, the project proponent shall pay a remuneration fee of $633.00 (2002 rate) for each acre of surface disturbance. This rate will be adjusted yearly for inflation.

Project Segment Under BO#1-5-97-F-251	Permanent	Temporary	Total acres	Remuneration Fees
Transmission Line ROW	22.89	63.92	86.81	$54,950.73
Roads	43.08		43.08	$27,269.64
Total	65.97	63.92	129.89	$82,220.37
Project Segment Under BO#1-5-96-F-23R.2	**Permanent**	**Temporary**	**Total acres**	**Remuneration Fees**
Transmission Line ROW	5.56	119.81	125.37	$79,359.21
Roads	27.24		19.68	$12,457.44
Total	32.80	119.81	152.61	$91,816.65

Fees for the power facility will be paid directly to Clark County under Section 10 of ESA.

- A Bureau approved qualified biologist[1] will present a tortoise education program[2] to all foremen, workers and other employees working on the project.

- The project applicant shall notify the Bureau at least 10 days before initiation of the project. Notification shall be made to the Bureau=s wildlife staff representative, Sharon McKelvey at (702) 515-5109.

- All project areas will be cleared by a qualified biologist before the start of ground disturbance using 100-percent coverage survey techniques no more than 3 days before the initiation of construction (5 days prior during the tortoise inactive period).

- To prevent trapping animals in the pipeline trench, escape ramps shall be installed every ½ mile. If the trench is periodically monitored during the day by a biologist, these ramps may not be necessary. However, frequency of monitoring should be increased with a rise of daytime temperatures to prevent heat-stressing animals. Any trench left open overnight will either have escape ramps installed as described above or will be covered or backfilled after ensuring they are unoccupied.

- The table below provides guidance for areas that will require tortoise fencing.

Project Component	**Fencing Required?**	**Type of Fencing**
Work Yards if on BLM land	Y	T
Roads	N	n/a
Transmission Line	N	n/a

P= Permanent Tortoise Fence[4]

3

---

[4] Temporary fencing will follow the same protocols as permanent fencing but will be removed once the permanent security fence is installed. Permanent tortoise-proof fencing will consist of 1-inch horizontal by 2-inch vertical wire mesh. The mesh will extend at least 18 inches above ground and, where feasible, 6 inches below ground. In situations where it is not feasible to bury the fence, the lower 6-12 inches of the fence hall be bent at a 90-degree angle towards the potential direction of encounter with tortoise and covered with cobble or other suitable material to ensure that tortoise or other animals cannot dig underneath, thus creating gaps through which tortoises may traverse.

- During the tortoise active season, areas designated for fencing will require a qualified tortoise biologist to conduct tortoise clearance of the fenceline prior to construction and be onsite during fence construction to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, a biologist will thoroughly examine the proposed fenceline and any affected burrows for the presence of tortoises no more than 5 days before construction. Burrows found outside the fence alignment will be flagged and avoided. Clearance of the fenceline will involve excavating nests, relocating eggs, flagging avoidable burrows, collapsing unavoidable, unoccupied burrows, and relocating tortoises in accordance with the Service-approved protocol for handling desert tortoises (Desert Tortoise Council 1994, revised 1999). If a copy of this protocol is needed, contact the Bureau's wildlife staff representative for this project, Sharon McKelvey at (702) 515-5109.

- The height of tortoise-proof fencing will be a minimum of 18 inches above ground. Fenceline specifications are detailed in footnote 4.

- Following fence construction and prior to the commencement of project activities, all desert tortoises shall be removed from the site. A qualified biologist shall oversee the survey for and removal of tortoises using techniques providing 100-percent coverage of all areas. Two complete passes of 100-percent coverage will be accomplished. Clearance of the fenced area will involve inspecting burrows for occupancy of tortoises or tortoise nests/eggs, collapsing unoccupied burrows, and removing tortoises and eggs (excavating nests by hand) in accordance with the tortoise handling protocol.

- Tortoises that are moved offsite and released into undisturbed habitat on public land, must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with the tortoise handling protocol.

Regulations for Ground Disturbing Activities:

- Fencing will be inspected daily and zero clearance will be maintained between the bottom of the fence and the ground and to ensure any bent portions are properly covered. Additional monitoring and maintenance shall include regular removal of trash and sediment accumulation and checking for rodent damage when using temporary tortoise proof fencing.

- Unless the area is fenced and cleared, the project will require an onsite biologist during construction of the project during the tortoise active period (typically March 1 through October 31), and a biologist(s) on call during the tortoise inactive period (typically November 1 through February 28/29). The Bureau requires a qualified tortoise monitor for each piece of mobile construction equipment. Application of water to access roads may attract desert tortoises to roadways and increase the risk for tortoise injury or mortality. Therefore, in addition to the equipment monitors, the Bureau also requires a monitor to periodically survey the roadways. The Bureau recognizes that often times certain pieces of equipment with limited movement may not need a tortoise monitor onsite continuously. Under such circumstances, it may be possible to coordinate construction activities to reduce the number of tortoise monitors onsite by "sharing" monitors between pieces of equipment. Should construction activities be coordinated to "share" monitors, the Compliance Inspection Contractor will present the Bureau with a revised monitoring plan for approval.

- If a tortoise is found onsite in harms way, activities shall cease until the tortoise moves, or is moved by a qualified tortoise biologist, or individual trained in the proper technique of handling and moving desert tortoises in accordance with the tortoise handling protocol. An exception is made if an operator encounters a desert tortoise in *imminent danger*, the operator shall move the tortoise out of harm=s way and on to adjacent Bureau land. Tortoises that are moved offsite and released into undisturbed habitat on public land, must be placed in the shade of a shrub during mild temperatures, in a natural unoccupied burrow or hibernaculum in which it was found, or in an artificially constructed burrow if temperatures are too hot or too cold as described in the tortoise handling protocol.

Regulations Following Conclusion of Construction Activities

- The project proponent must submit a document to the Bureau within 30 days of completion of the project showing the number of acres disturbed, remuneration fees paid, and number of tortoises taken, which includes capture and displacement, killed, injured, and harassed by other means, during implementation of programmatic actions.

- Temporary fencing will be removed at the end of the construction activity and the area will be reclaimed. Permanent fencing may be removed upon termination and reclamation of the project, or when it is determined by the Bureau and Service that the fence is no longer necessary. Fencing and associated disturbance will be installed within the requested rights-of-way.

- Restoration of the temporary disturbance areas will be conducted in accordance with the restoration protocols for this project.

The terms and conditions of the programmatic biological opinion were written to cover a variety of projects. To clarify these stipulations, project specific stipulations are provided within the text of the Plan of Development. In accordance with term and condition 4.e of the original BO the Bureau has the authority to provide additional stipulations as needed. Any additional stipulations are provided below and in the project specific guidance in the Plan of Development.

Terms and Condition of Biological Opinion in Area B

File No. 1-5-97-F-251

In order to be exempt from the prohibitions of section 9 of the Act, the applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described below. These terms and conditions are non-discretionary.

1. Measures shall be taken to minimize take of desert tortoises due to project-related activities.

   a.A qualified tortoise biologist shall present a tortoise-education program to all foremen, workers, and other employees working on the project. The program will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of Federal and State laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the biological opinion, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained. Workers will be encouraged to carpool to and from project sites. The program shall be approved by the Service prior to implementation. Specific and detailed instructions will be provided on the proper techniques to capture and move tortoises which appear onsite, in accordance with Service-approved protocol. Currently, the Service-approved protocol is Desert Tortoise Council 1994, revised 1999.

   b.A speed limit of 25 miles per hour shall be required for all vehicles on the project site and unposted dirt access roads.

   c.During construction activities, tortoise burrows should be avoided whenever possible. If a tortoise is found onsite during project activities which may result in take of the tortoise (e.g., in harms way), such activities shall cease until the tortoise moves, or is moved, out of harms way. The tortoise shall be moved by a qualified tortoise biologist, or individual trained in the proper technique of handling and moving desert tortoises. All workers will also be instructed to check underneath all vehicles before moving such vehicles. *Tortoises often take cover under vehicles.*

   d.The project shall require a tortoise biologist onsite during construction activities. Unless the area is fenced and cleared, the project will require an onsite biologist during construction of the project during the tortoise active period (March 1 through October 31), and a biologist on call during the tortoise inactive period (November 1 through February 28/29).

e.The Bureau must approve the selected consulting firm/biologist to be used by the applicant to implement the terms and conditions of the biological opinion or permit issued by the Bureau. Any biologist and/or firm not previously approved must submit a curriculum vitae and be approved by the Bureau before authorized to represent the Bureau in meeting compliance with the terms and conditions of the biological opinion. Other personnel may assist with implementing mitigation measures, but must be under direct field supervision by the approved qualified biologist.

In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a qualified desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the Bureau. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days field experience. All tortoise biologists shall comply with the Service-approved handling protocol (Desert Tortoise Council 1994, revised 1999) prior to conducting tasks in association with terms and conditions of the biological opinion. In addition, the biologist shall have the ability to recognize and accurately record survey results.

f.All project areas including construction sites, access routes, staging areas, and fencelines, will be cleared by a qualified biologist before the start of construction or ground disturbance. The parcel shall be surveyed for desert tortoise using survey techniques which provide 100-percent coverage. During the tortoise active season, the preconstruction clearance shall be no more than 3 days before initiation of construction. During the tortoise inactive season, the preconstruction clearance shall be within 5 days before work begins.

g.Desert tortoises encountered experiencing heat stress will be placed in a tub, by a qualified tortoise biologist, with one inch of water in an environment with a temperature between 76E F and 95E F for several hours, until heat stress symptoms are no longer evident.

h.Tortoises and nests found shall be relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999). Burrows containing tortoises or nests will be excavated by hand, with hand tools, to allow removal of the tortoise or eggs.

i.Tortoises that are moved offsite and released into undisturbed habitat on public land, must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with Desert Tortoise Council (1994, revised 1999).

j.Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one will be constructed in accordance with Desert Tortoise Council (1994, revised 1999). During mild temperature periods in the spring and early fall, tortoises removed from the site will not necessarily be placed in a burrow.

k.The plant site associated with the project will require fencing. The fence will be permanent and will require an initial tortoise clearance of the fenceline prior to fence construction, and a tortoise clearance following fence construction. Project sites to be fenced with permanent tortoise-proof fencing must be fenced prior to the commencement of surface disturbance activities within the project site. Fencing will consist of 1-inch horizontal by 2-inch vertical mesh. The mesh will extend at least 18 inches above ground and, where feasible, 6 inches below ground. In situations where it is not feasible to bury the fence, the lower 6-12 inches of the fence shall be bent at a 90-degree angle towards the potential direction of encounter with tortoise and covered with cobble or other suitable material to ensure that tortoise or other animals cannot dig underneath, thus creating gaps through which tortoises may traverse. The height of tortoise-proof fencing will be a minimum of 18 inches above ground. The fence shall be inspected, and zero clearance maintained between the bottom of the fence and the ground.

l.If fence construction occurs during the tortoise active season, a qualified tortoise biologist shall be onsite during construction of the tortoise-proof fence to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, a biologist will thoroughly examine the proposed fenceline and burrows for the presence of tortoises no more than 5 days before construction. Any desert tortoises or eggs found in the fenceline will be relocated offsite by a qualified tortoise biologist in accordance with approved protocol. Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities shall be clearly marked to prevent crushing.

Following Fence Construction: Prior to the commencement of project activities, all desert tortoises shall be removed from the site. A qualified biologist shall oversee the survey for and removal of tortoises using techniques providing 100-percent coverage of all areas. Two complete passes of 100-percent coverage will be accomplished. All desert tortoise burrows, and other species burrows which may be used by tortoises, will be examined to determine occupancy of each burrow by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed. Any desert tortoises or eggs found in the fenced area will be removed under the supervision of a qualified tortoise biologist in accordance with Service protocol.

m.After a project has been fenced and a tortoise clearance completed, if the operator encounters a desert tortoise in imminent danger, the operator shall move the tortoise out of harm's way and on to adjacent Bureau land. If the tortoise cannot be avoided or moved out of harm's way onto Bureau land, it shall be placed in a cardboard box or other suitable container and held in a shaded area until the Clark County pickup service or Bureau personnel can retrieve the tortoise.

On phased development projects, the operator may have the option with concurrence of the Bureau of initially fencing less than the total project acreage. The fenced area will be enlarged as the disturbance expands. To ensure that no tortoises are harmed, each new segment of fence will be constructed under the provision described in Terms and Conditions **1.k.** and **1.l.** above. Payment of the mitigation fee identified in Term and Condition **3** below, will be required prior to surface disturbance of each phase.

n.The operator shall inspect the fencing at least on a quarterly basis, to insure that it is in compliance with the standards described in Term and Condition **1.k** and **1.l.** above, and shall perform maintenance when needed including removing trash, sediment accumulation, and other debris. Permanent fencing may be removed upon termination and reclamation of the project, or when it is determined by the Bureau and Service that the fence is no longer necessary. Monitoring and maintenance shall include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried.

2. Measures shall be taken to minimize predation on tortoises by ravens drawn to the project area.

A litter-control program shall be implemented, by the applicant, to minimize predation on tortoises by ravens drawn to the project site. This program will include the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Vehicles hauling trash to the landfill and leaving the landfill must be secured to prevent litter from blowing out along the road.

3. Measures shall be taken to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to project-related activities.

   a. If possible, overnight parking and storage of equipment and materials, including stockpiling, shall be within previously disturbed areas or areas to be disturbed which have been cleared by a tortoise biologist. If not possible, areas for overnight parking and storage of equipment shall be designated by the tortoise biologist which will minimize habitat disturbance.

   b. All vehicle traffic will be restricted to existing access roads. New access roads will be created only when absolutely necessary and only when approved by the Bureau. Routes for new access roads will be flagged by the tortoise biologist prior to surface disturbance.

   c. Project activity areas will be clearly marked or flagged at the outer boundaries before the onset of construction. All activities shall be confined to designated areas. Blading of vegetation will occur only to the extent necessary and shall be limited to areas designated for that purpose by the Bureau or tortoise biologist.

   d. Remuneration fees apply to future disturbance in tortoise habitat. Past disturbance or disturbance on land not considered to be tortoise habitat by a tortoise biologist, and approved by the Bureau, are not assessed a tortoise remuneration fee. Remuneration fees will be used to fund management actions which are expected to benefit the desert tortoise. Actions may involve: Habitat acquisition; population or habitat enhancement or protection; research that increases our knowledge of desert tortoise biology, habitat requirements, or factors affecting habitat attributes; reducing loss of individual animals, documenting the species' current status and trend, and preserving distinct population attributes or any other action described in the Management Oversight Group's report titled *Compensation for the Desert Tortoise* (Hastey, et al. 1991) or Recovery Plan.

   e. Payment of a remuneration fee, currently set at $633.00 per acre, will be required for all projects prior to issuance of the lease, permit, notice to proceed, or other Bureau authorization.

      The current rate of $633.00 per acre will be indexed for inflation as described in Term and Condition **3.f.** below.

f. Prior to issuance of the permit, right-of-way grant, lease (except R&PP leases), notice to proceed, or approval of any action to be covered under the biological opinion, and prior to any surface-disturbing activity associated with the proposed project the project proponent shall pay a remuneration fee of $633.00 for each acre of surface disturbance. This rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) on January 31 of each year, beginning January 31, 1998. Fees assessed or collected for projects covered under this biological opinion after January 31st of each year will be adjusted based on the CPI-U. Information on the CPI-U can be found on the Internet at: http://stats.bls.gov/news.release/cpi.nws.htm.

The surface disturbance and remuneration fees for this project are as follows:

Project Segment Under BO#1-5-97-F-251	Permanent	Temporary	Total acres	Remuneration Fees
Transmission Line ROW	22.89	63.92	86.81	$54,950.73
Roads	43.08		43.08	$27,269.64
Total	65.97	63.92	129.89	$82,220.37

Project Segment Under BO#1-5-96-F-23R.2	Permanent	Temporary	Total acres	Remuneration Fees
Transmission Line ROW	5.56	119.81	125.37	$79,359.21
Roads	27.24		19.68	$12,457.44
Total	32.80	119.81	152.61	$91,816.65

*Fees for the power facility will be paid directly to Clark County under Section 10 of ESA.

This fee will be paid directly to the Desert Tortoise Public Lands Conservation Fund (Account Number 730-9999-2315), administered by Clark County or any other administrator approved by the Bureau and Service. The administrator serves as the banker of these funds and receives no benefit from administering these funds. These funds are independent of any other fees collected by Clark County for desert tortoise conservation planning.

The payment shall be accompanied by the **Section 7 Fee Payment Form**, (Attachment) and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County Treasurer (or other administrator named by the Bureau and Service), and delivered to:

Clark County Habitat Conservation Plan Administrator
Department of Comprehensive Planning
Clark County Government Center, Third floor
500 South Grand Central Parkway
Las Vegas, Nevada 89155- 1712

In addition, a copy of the Section 7 Fee Payment Form will be accompanied with a payment verification and delivered to:

The Bureau of Land Management
Las Vegas Field Office
4701 Torrey Pines
Las Vegas, Nevada 89130
Attn: Assistant Field Manager, Non-Renewable Resources

h. Projects resulting in residual impacts will require the submission of a Bureau-approved reclamation plan. The reclamation plan will describe objectives and methods to be used, species of plants and/or seed mixture to be used, time of planting, success standards, and follow-up monitoring. Depending upon the size and location of the project, reclamation could simply involve recontouring, if needed, and rehabilitation and restriction of access points or could involve reclamation over the entire area of surface disturbance. Reclamation will be addressed on a case-by-case basis.

4.Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and re-initiation requirements contained in the biological opinion.

a.The project applicant shall notify the Bureau at least 10 days before initiation of the project. Notification shall be made to the Bureau's wildlife staff at (702) 515-5000.

b.The Bureau wildlife staff (702/515-5000) and Service (702/515-5230) must be notified of any desert tortoise death or injury due to the project implementation by close of business on the following workday.

c.All appropriate NDOW permits or letters of authorization shall be acquired prior to handling desert tortoises and their parts, prior to initiation of any activity which may require handling tortoise.

d.The project proponent must submit a document to the Bureau within 30 days of completion of the project showing the number of acres disturbed; remuneration fees paid; and number of tortoises taken, which includes capture and displacement, killed, injured, and harassed by other means, during implementation of programmatic actions.

e.For tortoise removals in Clark County, the applicant shall make prior arrangements with Clark County's tortoise pickup service (702/593-9027) at least 10 days prior to the commencement of tortoise collection. Outside Clark County, initial notification shall be made to the Bureau as stated in Term and Condition **4.b.** above.

5. Additional Stipulations Required by the Bureau

   a. An independent 3rd party contractor will be hired to oversee compliance with the stipulations of this project. All questions or concerns regarding compliance shall be directed to the Bureau through this 3rd party compliance contractor.

   b. To prevent trapping animals in the pipeline trench, escape ramps shall be installed every ½ mile. If the trench is periodically monitored during the day by a biologist, these ramps may not be necessary. However, frequency of monitoring should be increased with a rise of daytime temperatures to prevent heat-stressing animals. Any trench left open overnight will either have escape ramps installed as described above or will be covered or backfilled after ensuring they are unoccupied.

c. The Bureau requires a qualified tortoise monitor for each piece of mobile construction equipment. Application of water to access roads may attract desert tortoises to roadways and increase the risk for tortoise injury or mortality. Therefore, in addition to the equipment monitors, the Bureau also requires a monitor to periodically survey the roadways. The Bureau recognizes that often times certain pieces of equipment with limited movement may not need a tortoise monitor onsite continuously. Under such circumstances, it may be possible to coordinate construction activities to reduce the number of tortoise monitors onsite by "sharing" monitors between pieces of equipment. Should construction activities be coordinated to "share" monitors, the Compliance Inspection Contractor will present the Bureau with a revised monitoring plan for approval.

Appendix D - Native American Notifications

This page intentionally left blank

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, Nevada 89130-2301

N-75025
2800
(NV-056)

April 23, 2002

Mr. Philbert Swain, Chair
Moapa Pauite Tribe
PO Box 340
Moapa, NV 89026

Dear Mr. Swain:

Nevada Power Company proposes to construct, operate, and maintain a 500KV transmission line from the new Harry Allen Substation to the existing Northwest Substation in Clark County, Nevada. The project will include: (1) a single circuit 500kV transmission line on lattice structures or steel poles from the new Duke Generating Facility to the existing Northwest Substation (approx 26 miles), (2) a fiber optic cable along the entire line for communication, and (3) construction and operation of new or improved roads to each structure within the 500kV transmission line. Power Engineers is assisting Nevada Power with environmental studies associated with the construction this project, including impacts to cultural resources. An Environmental Assessment of the project was sent to you on or before March 29, 2002.

To ensure no historic properties are affected by the construction and operation of this project, Power Engineers contracted Knight Leavitt and Associates (KL&A) and San Bernardino County Museum (SBCM) to conduct a record search and literature review at Harry Reid Center for Environmental Studies at the University of Nevada, Las Vegas and the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. This was followed by a complete pedestrian inventory. The KL&A Class III inventory recorded four cultural resource locations, three new and one previously recorded. The newly recorded archeological properties include a historic structure (26CK6570), one prehistoric chipping station (26CK6571), and a group of structures associated with the Las Vegas Army Air Field Gunnery School (26CK6572). The previously recorded site encountered, and subsequently re-evaluated, is a railroad grade segment attributed to the Las Vegas &

Tonopah Railroad system (26CK1649). The SBCM inventory identified 23 paleontological localities.

In conjunction with these studies, we are interested in obtaining information the Tribe may be willing to contribute concerning the project and the cultural and traditional resources of the project area. Any information you can provide would be greatly appreciated. Please respond within 30 days with any information that you may have.

If you have any questions or comments, please feel free to contact Stan Rolf at (702) 515-5055. Thank you for your assistance with this matter and we look forward to hearing from you.

Sincerely,

John Jamrog
Assistant Field Manager
Renewable Resources

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Las Vegas Field Office
4701 N. Torrey Pines Drive
Las Vegas, Nevada 89130-2301

N-75025
2800
(NV-056)

April 23, 2002

Mr. Curtis Anderson, Chair
Las Vegas Paiute Tribe
Number One Paiute Drive
Las Vegas, NV 89106

Dear Mr. Anderson:

Nevada Power Company proposes to construct, operate, and maintain a 500KV transmission line from the new Harry Allen Substation to the existing Northwest Substation in Clark County, Nevada. The project will include: (1) a single circuit 500kV transmission line on lattice structures or steel poles from the new Duke Generating Facility to the existing Northwest Substation (approx 26 miles), (2) a fiber optic cable along the entire line for communication, and (3) construction and operation of new or improved roads to each structure within the 500kV transmission line. Power Engineers is assisting Nevada Power with environmental studies associated with the construction this project, including impacts to cultural resources. An Environmental Assessment of the project was sent to you on or before March 29, 2002.

To ensure no historic properties are affected by the construction and operation of this project, Power Engineers contracted Knight Leavitt and Associates (KL&A) and San Bernardino County Museum (SBCM) to conduct a record search and literature review at Harry Reid Center for Environmental Studies at the University of Nevada, Las Vegas and the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. This was followed by a complete pedestrian inventory. The KL&A Class III inventory recorded four cultural resource locations, three new and one previously recorded. The newly recorded archeological properties include a historic structure (26CK6570), one prehistoric chipping station (26CK6571), and a group of structures associated with the Las Vegas Army Air Field Gunnery School (26CK6572). The previously recorded site encountered, and subsequently re-evaluated, is a railroad grade segment attributed to the Las Vegas &

Tonopah Railroad system (26CK1649). The SBCM inventory identified 23 paleontological localities.

In conjunction with these studies, we are interested in obtaining information the Tribe may be willing to contribute concerning the project and the cultural and traditional resources of the project area. Any information you can provide would be greatly appreciated. Please respond within 30 days with any information that you may have.

If you have any questions or comments, please feel free to contact Stan Rolf at (702) 515-5055. Thank you for your assistance with this matter and we look forward to hearing from you.

Sincerely,

John Jamrog

Assistant Field Manager

Renewable Resources

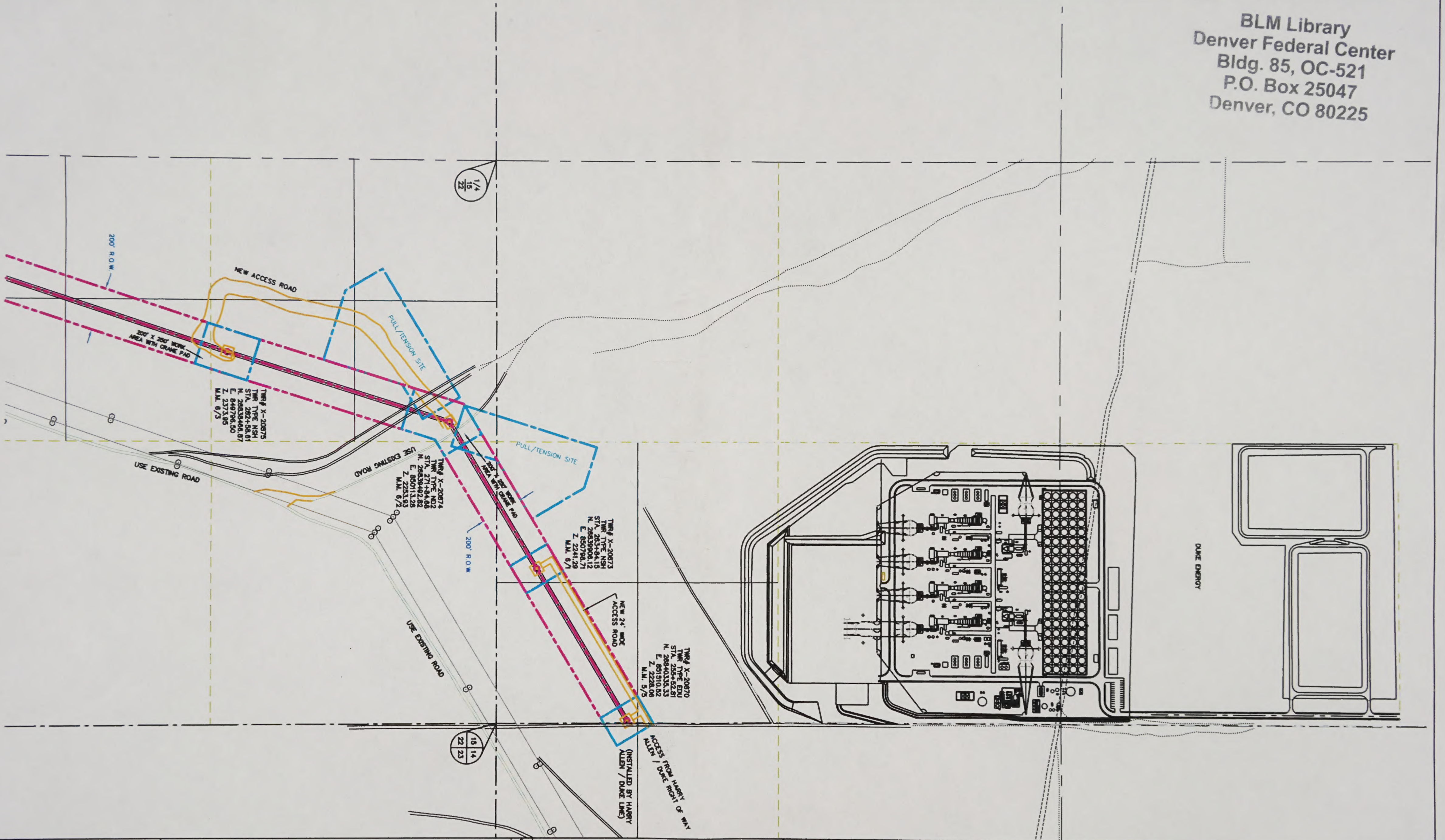
Appendix E - Structure Location Drawings

This page intentionally left blank

Appendix F - Harry Allen – Duke Plan of Development and Associated Detailed Structure Location Drawings

This page intentionally left blank

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


1/4
15
22
200' R.O.W.
NEW ACCESS ROAD
200' X 250' WORK AREA WITH CRANE PAD
PULL/TENSION SITE
TWR# X-20875
TWR TYPE NSH
STA. 282+58.61
N. 26838466.87
E. 849798.50
Z. 2373.95
M.M. 6/3
USE EXISTING ROAD
USE EXISTING ROAD
TWR# X-20874
TWR TYPE ND2
STA. 271+84.68
N. 26839402.82
E. 850113.28
Z. 2253.93
M.M. 6/2
200' X 200' WORK AREA WITH CRANE PAD
PULL/TENSION SITE
200' R.O.W.
TWR# X-20873
TWR TYPE NSH
STA. 263+84.15
N. 26839906.12
E. 850798.71
Z. 2241.29
M.M. 6/1
NEW 24' WIDE ACCESS ROAD
USE EXISTING ROAD
TWR# X-20870
TWR TYPE EDU
STA. 255+52.81
N. 26840336.33
E. 851510.52
Z. 2228.08
M.M. 5/5
15
14
22
23
(INSTALLED BY HARRY ALLEN / DUKE LINE)
ACCESS FROM HARRY ALLEN / DUKE RIGHT OF WAY
DUKE ENERGY

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:

LEGEND

TYPICAL UNLESS NOTED OTHERWISE

150'
50'
50'
250'

- TEMPORARY DISTURBANCE AREA
- PERMANENT DISTURBANCE AREA
- TOWER
- SPUR ROAD (41' X 24')
- ACCESS ROAD (24' NOM)

Ⓟ PALEO SITE

NEW ACCESS ROAD

IMPROVE EXISTING ROAD

USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400

(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 18 S
R 63 E

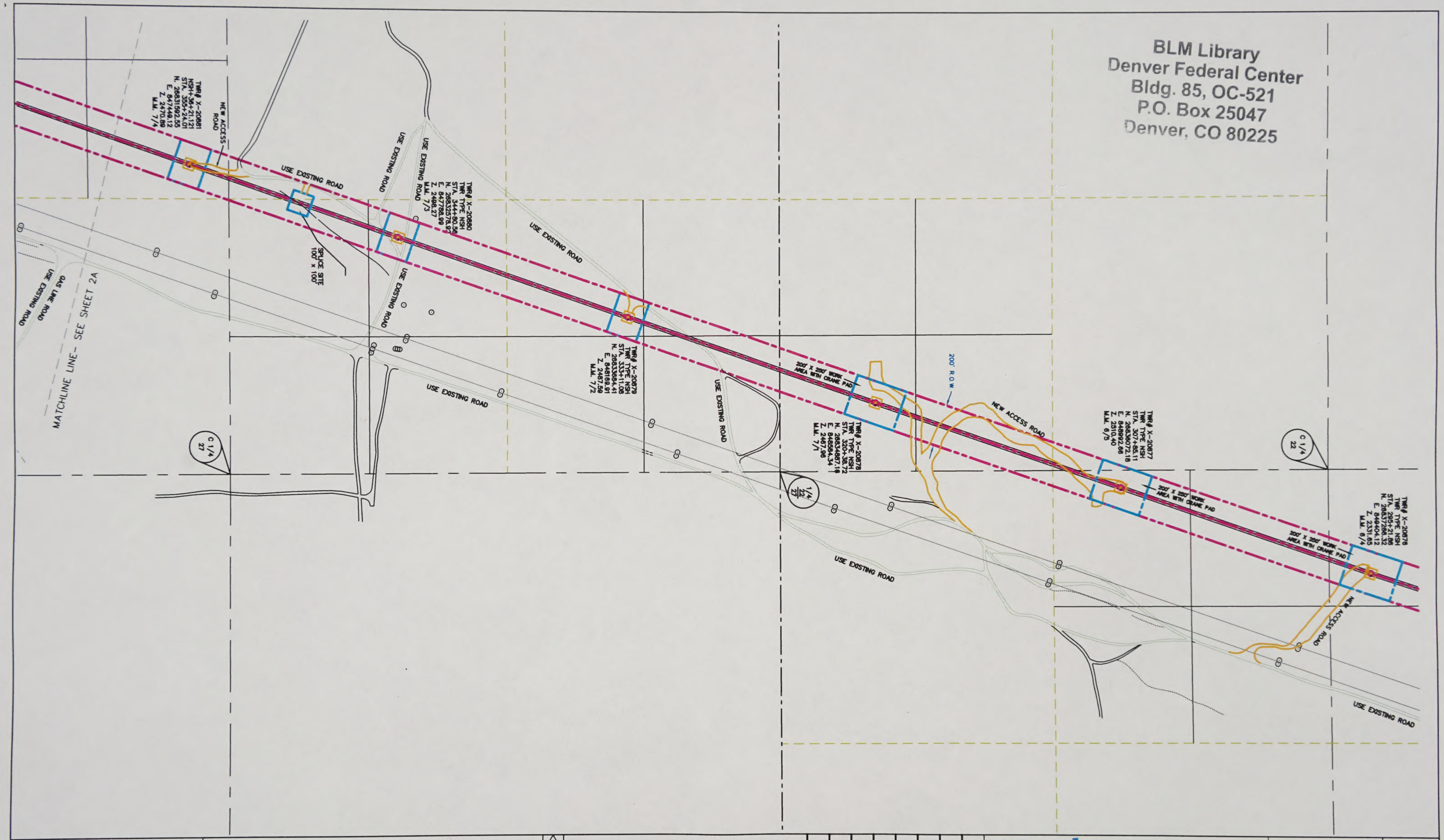
15	14
22	23

CLARK CO.

N

SHEET NO.
1
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


TWR# X-20881
NSH+30+21.121
STA. 355+24.01
N. 26831592.55
E. 847440.12
Z. 2470.80
M.M. 7/4
NEW ACCESS ROAD
USE EXISTING ROAD
SPLICE SITE 100' x 100'
USE EXISTING ROAD
USE EXISTING ROAD
TWR# X-20880
TWR TYPE NSH
STA. 344+80.56
N. 26832578.92
E. 847788.00
Z. 2408.27
M.M. 7/3
USE EXISTING ROAD
USE EXISTING ROAD
USE GAS LINE ROAD
MATCHLINE LINE- SEE SHEET 2A
C 1/4 27
USE EXISTING ROAD
TWR# X-20879
TWR TYPE NSH
STA. 333+11.08
N. 26833684.41
E. 848169.91
Z. 2487.59
M.M. 7/2
USE EXISTING ROAD
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20878
TWR TYPE NSH
STA. 320+38.72
N. 26834857.16
E. 848584.34
Z. 2487.86
M.M. 7/1
1/4 22 27
200' R.O.W.
NEW ACCESS ROAD
USE EXISTING ROAD
TWR# X-20877
TWR TYPE NSH
STA. 307+85.11
N. 26836072.18
E. 848992.66
Z. 2510.40
M.M. 6/5
200' X 250' WORK AREA WITH CRANE PAD
C 1/4 22
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20876
TWR TYPE NSH
STA. 295+21.86
N. 26837266.32
E. 849404.12
Z. 2331.65
M.M. 6/4
NEW ACCESS ROAD
USE EXISTING ROAD

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ⊗ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' MOD)
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE
N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								
REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

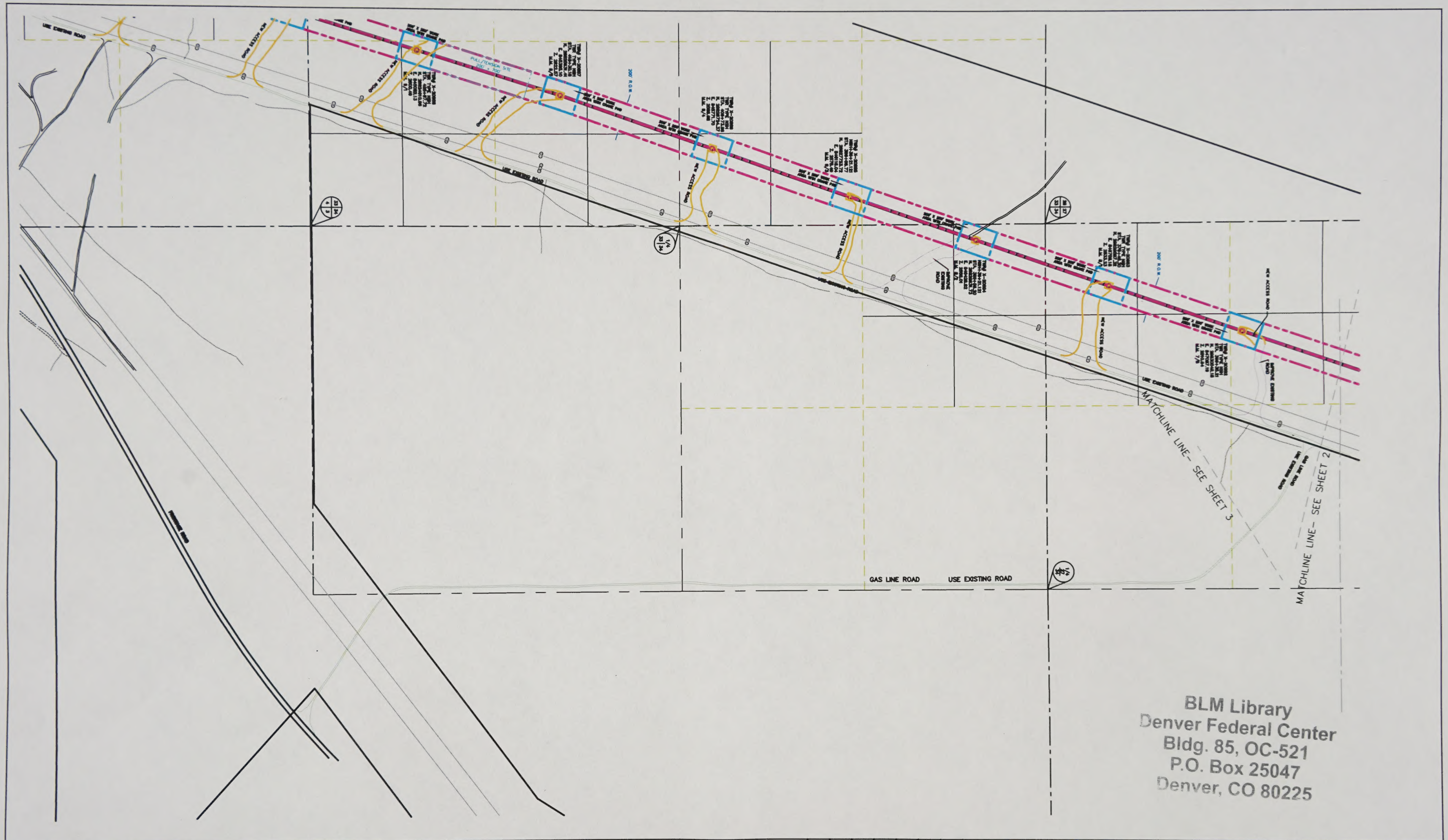
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 18 S
R 63 E

22	23
27	26

CLARK CO.

SHEET NO.
2
OF
22



USE EXISTING ROAD
NEW ACCESS ROAD
PULL/TENSION SITE
200' R.O.W.
MATCHLINE LINE- SEE SHEET 3
MATCHLINE LINE- SEE SHEET 2
GAS LINE ROAD
USE EXISTING ROAD

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE

- TEMPORARY DISTURBANCE AREA
- PERMANENT DISTURBANCE AREA
- TOWER
- SPUR ROAD (4)' X 24')
- ACCESS ROAD (24' NOM)
- PALEO SITE
- NEW ACCESS ROAD
- IMPROVE EXISTING ROAD
- USE EXISTING ROAD

SPLICE SITE

(IN FEET)
Horiz: 1 inch = 300 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED - APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

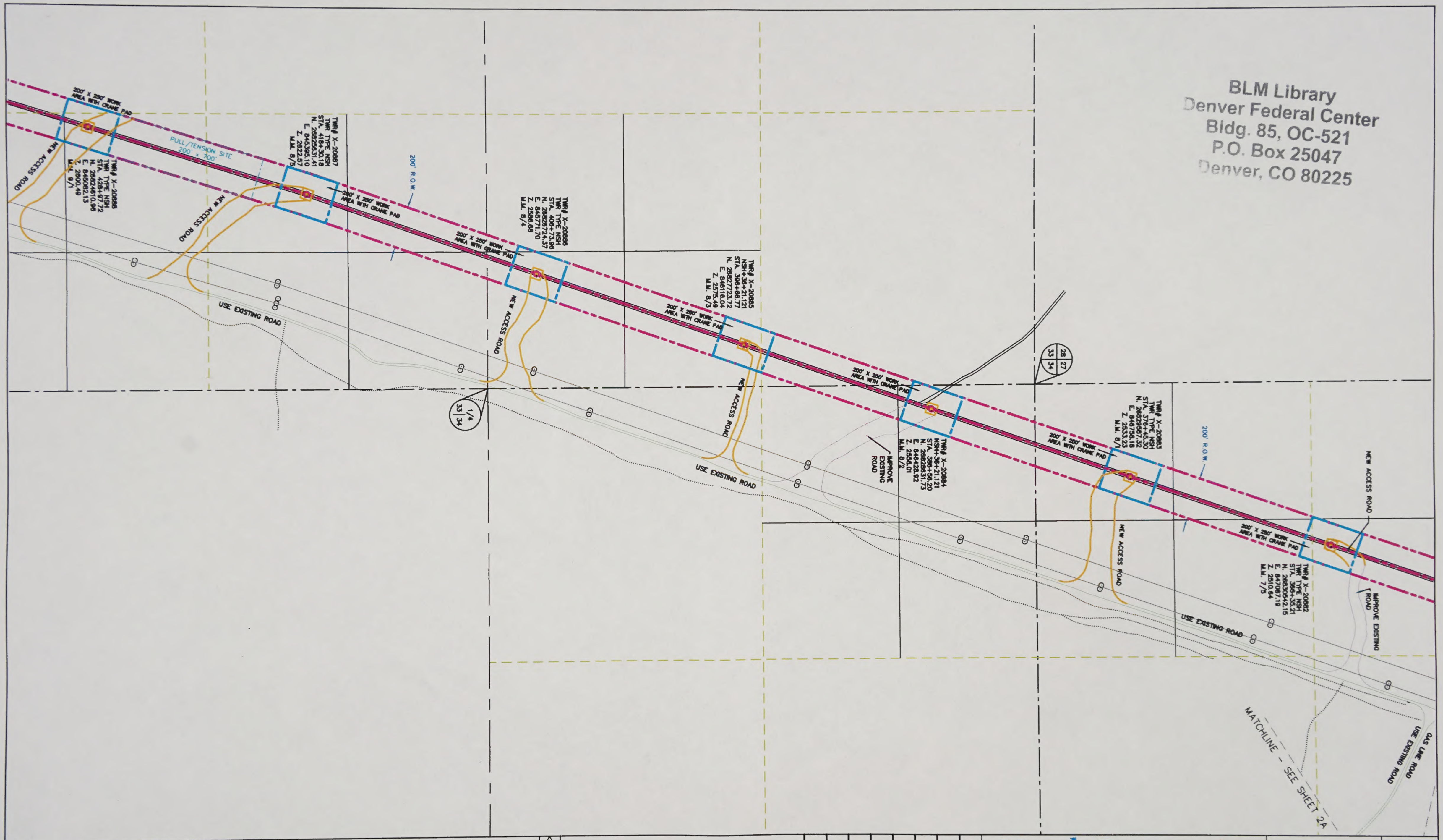
T 18 S
R 63 E

22	23
27	26

CLARK CO.

SHEET NO.
2A
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


200' X 250' WORK AREA WITH CRANE PAD
NEW ACCESS ROAD
TWR# X-20888
TWR TYPE NSH
STA. 428+97.72
N. 26824610.86
E. 845082.13
Z. 2600.49
M.M. 9/1
PULL/TENSION SITE
200' x 700'
NEW ACCESS ROAD
TWR# X-20887
TWR TYPE NSH
STA. 418+30.18
N. 26825631.41
E. 845395.10
Z. 2622.57
M.M. 8/5
200' X 250' WORK AREA WITH CRANE PAD
200' R.O.W.
USE EXISTING ROAD
TWR# X-20886
TWR TYPE NSH
STA. 406+73.86
N. 26826724.37
E. 845771.70
Z. 2586.68
M.M. 8/4
200' X 250' WORK AREA WITH CRANE PAD
NEW ACCESS ROAD
1/4
33 | 34
TWR# X-20885
NSH+30+21.121
STA. 396+86.77
N. 26827723.72
E. 846116.04
Z. 2575.49
M.M. 8/3
200' X 250' WORK AREA WITH CRANE PAD
NEW ACCESS ROAD
USE EXISTING ROAD
200' X 250' WORK AREA WITH CRANE PAD
IMPROVE EXISTING ROAD
TWR# X-20884
NSH+30+21.121
STA. 386+56.20
N. 26828631.73
E. 846428.92
Z. 2558.01
M.M. 8/2
28 | 27
33 | 34
TWR# X-20883
TWR TYPE NSH
STA. 376+46.30
N. 26829587.32
E. 846758.18
Z. 2533.23
M.M. 8/1
200' X 250' WORK AREA WITH CRANE PAD
200' R.O.W.
NEW ACCESS ROAD
NEW ACCESS ROAD
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20882
TWR TYPE NSH
STA. 366+35.21
N. 26830642.15
E. 847067.19
Z. 2510.64
M.M. 7/5
IMPROVE EXISTING ROAD
USE EXISTING ROAD
MATCHLINE - SEE SHEET 2A
GAS LINE ROAD
USE EXISTING ROAD

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
50'
50'
200'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' MIN)

Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE
N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED - APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.
△

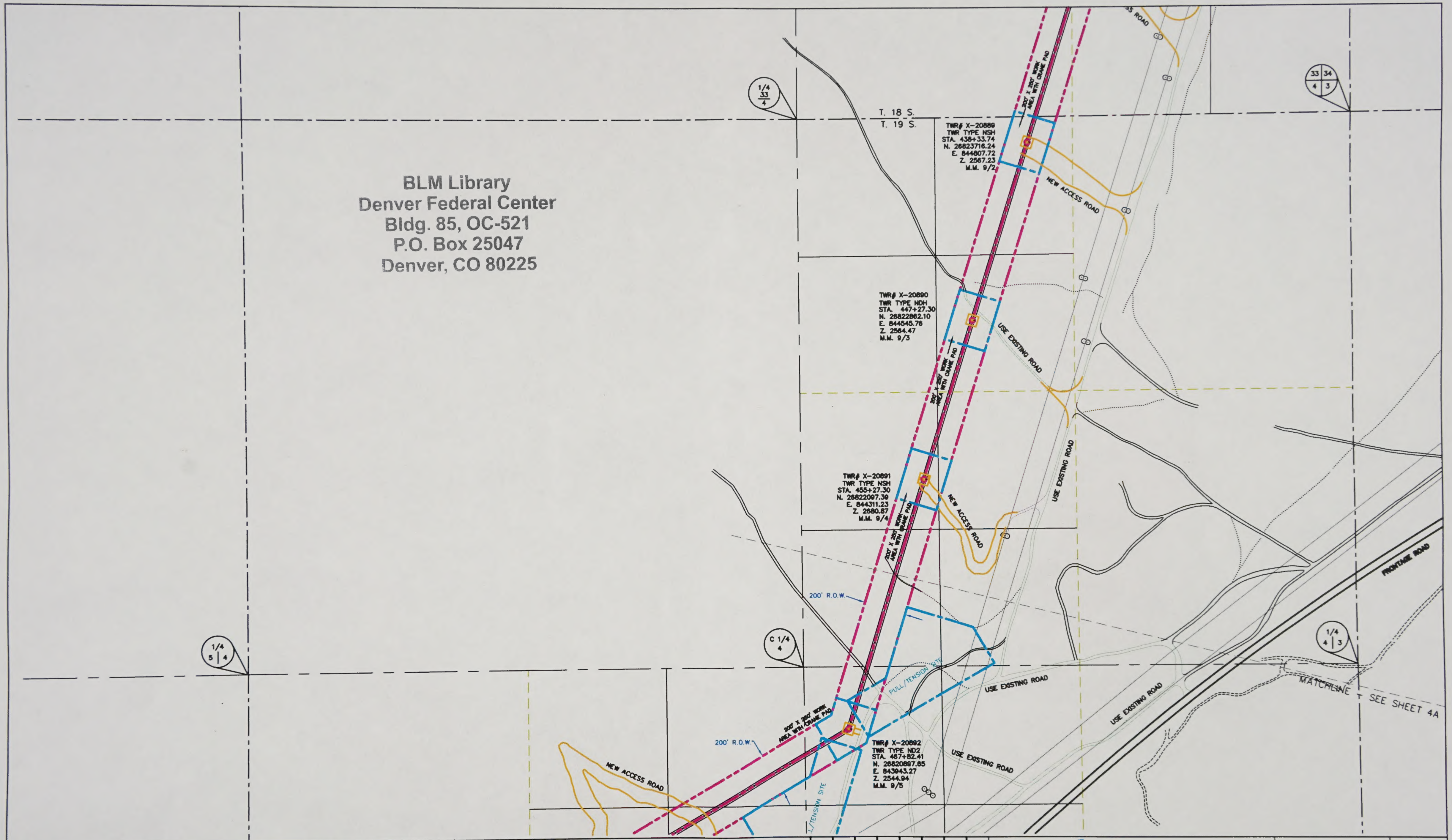
T 18 S
R 63 E

28	27
33	34

CLARK CO.

SHEET NO.
3
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


1/4
33
4
33 | 34
4 | 3
T. 18 S.
T. 19 S.
ROAD
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20889
TWR TYPE NSH
STA. 438+33.74
N. 26823716.24
E. 844807.72
Z. 2567.23
M.M. 9/2
NEW ACCESS ROAD
TWR# X-20890
TWR TYPE NDH
STA. 447+27.30
N. 26822862.10
E. 844545.76
Z. 2564.47
M.M. 9/3
USE EXISTING ROAD
200' X 250' WORK AREA WITH CRANE PAD
USE EXISTING ROAD
TWR# X-20891
TWR TYPE NSH
STA. 455+27.30
N. 26822097.39
E. 844311.23
Z. 2680.87
M.M. 9/4
NEW ACCESS ROAD
200' X 250' WORK AREA WITH CRANE PAD
200' R.O.W.
FRONTAGE ROAD
1/4
5 | 4
C 1/4
4
PULL/TENSION SITE
USE EXISTING ROAD
USE EXISTING ROAD
1/4
4 | 3
MATCHLINE - SEE SHEET 4A
200' X 200' WORK AREA WITH CRANE PAD
200' R.O.W.
NEW ACCESS ROAD
TWR# X-20892
TWR TYPE ND2
STA. 467+82.41
N. 26820897.65
E. 843943.27
Z. 2544.94
M.M. 9/5
USE EXISTING ROAD
L/TENSION SITE

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ⊗ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
250'
30'
30'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' NOM)

Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED - APRIL 30, 2002								

Nevada Power

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

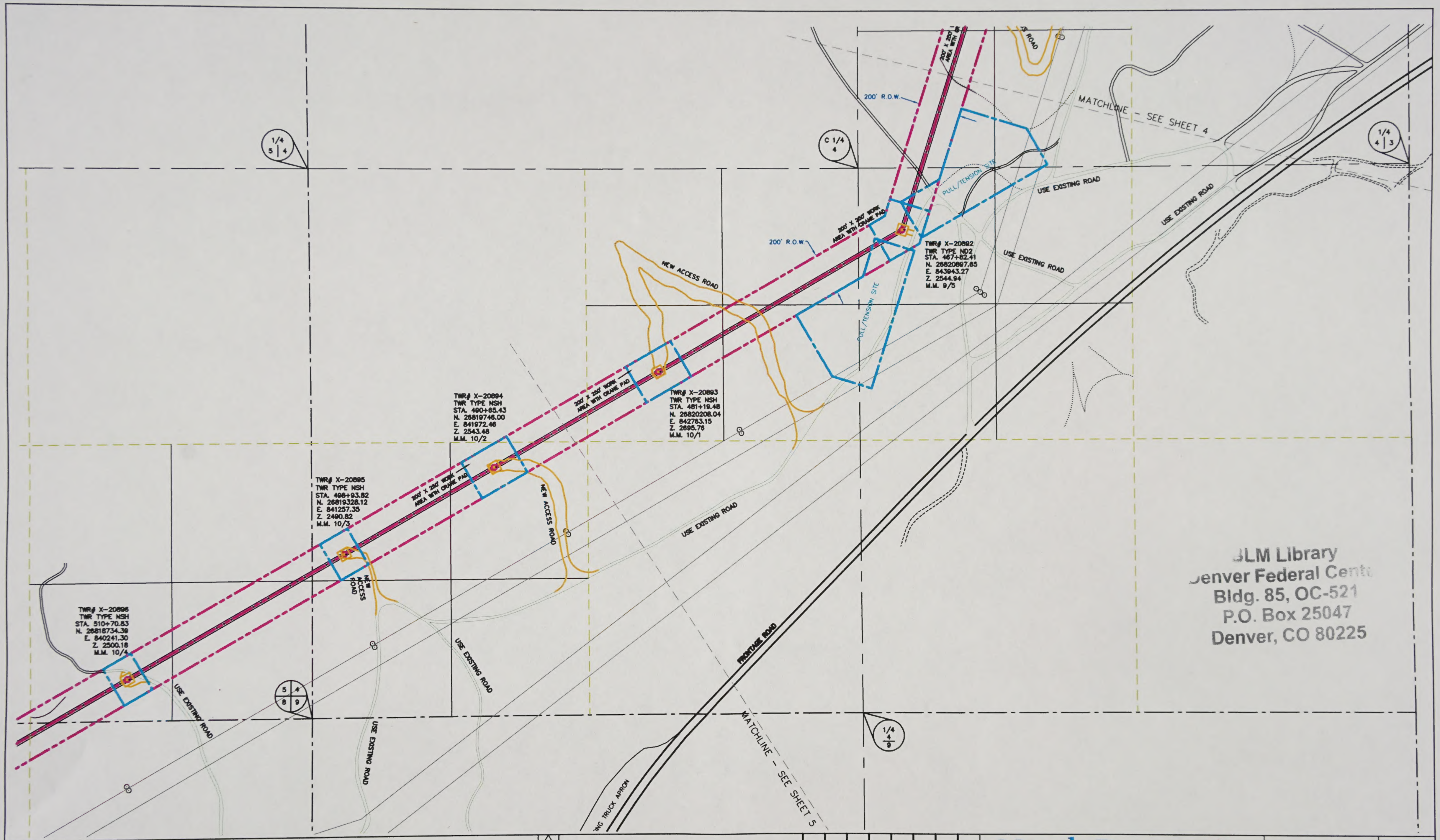
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 63 E

4	3
9	10

CLARK CO.

SHEET NO.
4
OF
22



1/4 5 | 4
C 1/4 4
1/4 4 | 3
5 4 8 9
1/4 4 9
200' R.O.W.
200' X 250' WORK AREA WITH CRANE PAD
MATCHLINE - SEE SHEET 4
MATCHLINE - SEE SHEET 5
PULL/TENSION SITE
PULL/TENSION SITE
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
NEW ACCESS ROAD
NEW ACCESS ROAD
NEW ACCESS ROAD
FRONTAGE ROAD
TRUCK APRON
TWR# X-20892
TWR TYPE ND2
STA. 467+82.41
N. 26820897.65
E. 843943.27
Z. 2544.94
M.M. 9/5
TWR# X-20893
TWR TYPE NSH
STA. 481+19.48
N. 26820208.04
E. 842763.15
Z. 2695.76
M.M. 10/1
TWR# X-20894
TWR TYPE NSH
STA. 490+65.43
N. 26819746.00
E. 841972.46
Z. 2543.48
M.M. 10/2
TWR# X-20895
TWR TYPE NSH
STA. 498+93.82
N. 26819328.12
E. 841257.35
Z. 2490.82
M.M. 10/3
TWR# X-20896
TWR TYPE NSH
STA. 510+70.83
N. 26818734.39
E. 840241.30
Z. 2500.18
M.M. 10/4

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE

- 130' 200' 50' 50'
- TEMPORARY DISTURBANCE AREA
- PERMANENT DISTURBANCE AREA
- TOWER
- SPUR ROAD (41' X 24')
- ACCESS ROAD (24' WIDE)
- Ⓟ PALEO SITE
- NEW ACCESS ROAD
- IMPROVE EXISTING ROAD
- USE EXISTING ROAD

100' 100' SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED - APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

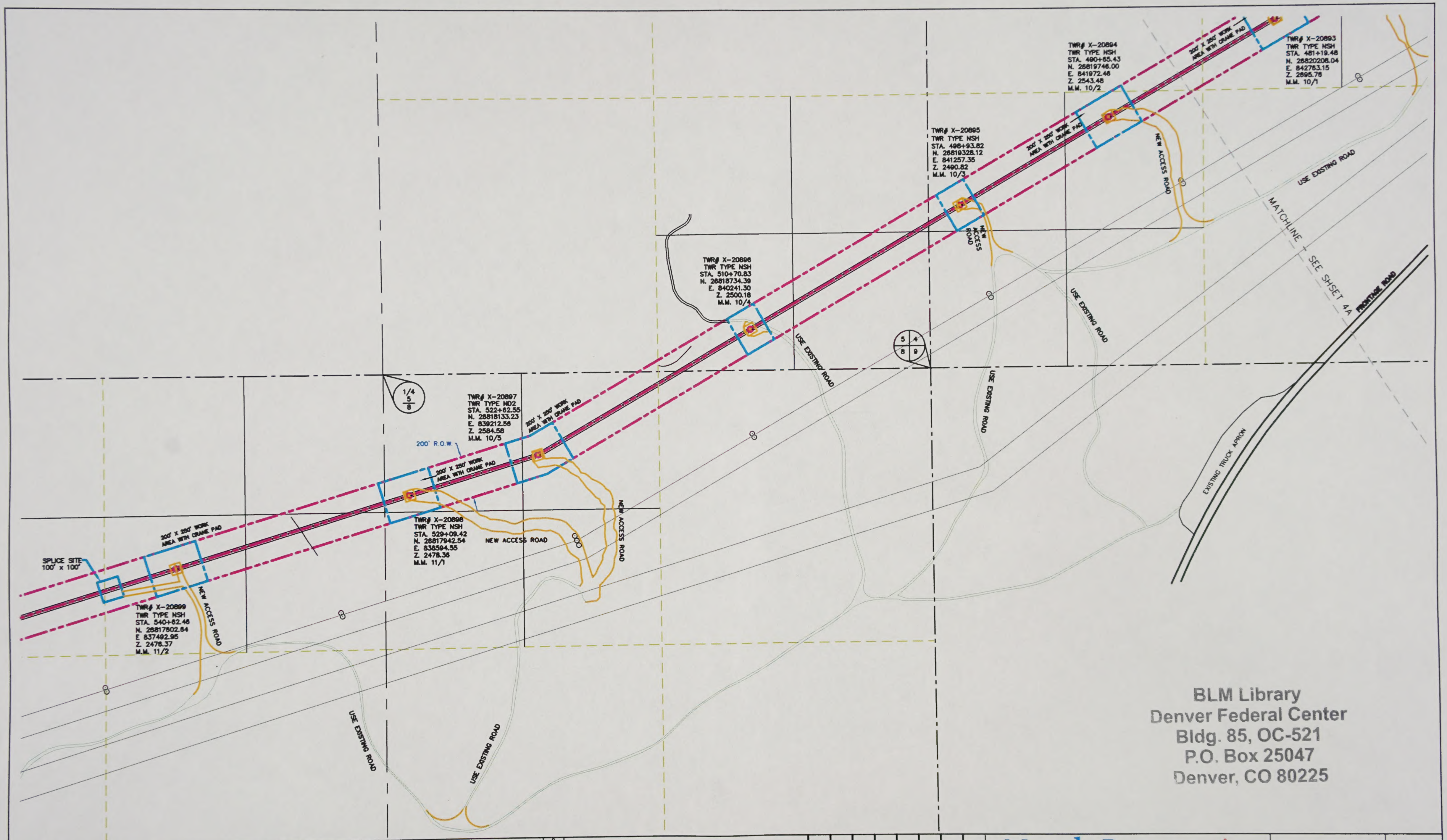
DWG. NO.
W.O. NO.
SCALE: 1" = 200' N/A

T 19 S
R 63 E

4	3
9	10

CLARK CO.

SHEET NO.
4A
OF
22


TWR# X-20893
TWR TYPE NSH
STA. 481+19.48
N. 26820208.04
E. 842763.15
Z. 2695.76
M.M. 10/1
TWR# X-20894
TWR TYPE NSH
STA. 490+65.43
N. 26819746.00
E. 841972.46
Z. 2543.48
M.M. 10/2
200' X 250' WORK AREA WITH CRANE PAD
NEW ACCESS ROAD
USE EXISTING ROAD
MATCHLINE - SEE SHSET 4A
FRONTAGE ROAD
TWR# X-20895
TWR TYPE NSH
STA. 498+93.82
N. 26819328.12
E. 841257.35
Z. 2490.82
M.M. 10/3
NEW ACCESS ROAD
USE EXISTING ROAD
USE EXISTING ROAD
EXISTING TRUCK APRON
TWR# X-20896
TWR TYPE NSH
STA. 510+70.83
N. 26818734.39
E. 840241.30
Z. 2500.18
M.M. 10/4
USE EXISTING ROAD
5 4 8 9
1/4 5 8
TWR# X-20897
TWR TYPE ND2
STA. 522+62.55
N. 26818133.23
E. 839212.56
Z. 2584.58
M.M. 10/5
200' X 250' WORK AREA WITH CRANE PAD
200' R.O.W.
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20898
TWR TYPE NSH
STA. 529+09.42
N. 26817942.54
E. 838594.55
Z. 2478.36
M.M. 11/1
NEW ACCESS ROAD
NEW ACCESS ROAD
SPLICE SITE 100' x 100'
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20899
TWR TYPE NSH
STA. 540+82.46
N. 26817602.84
E 837492.95
Z. 2478.37
M.M. 11/2
NEW ACCESS ROAD
USE EXISTING ROAD
USE EXISTING ROAD

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' WIDE)
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
100'
SPLICE SITE

N
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED - APRIL 30, 2002								

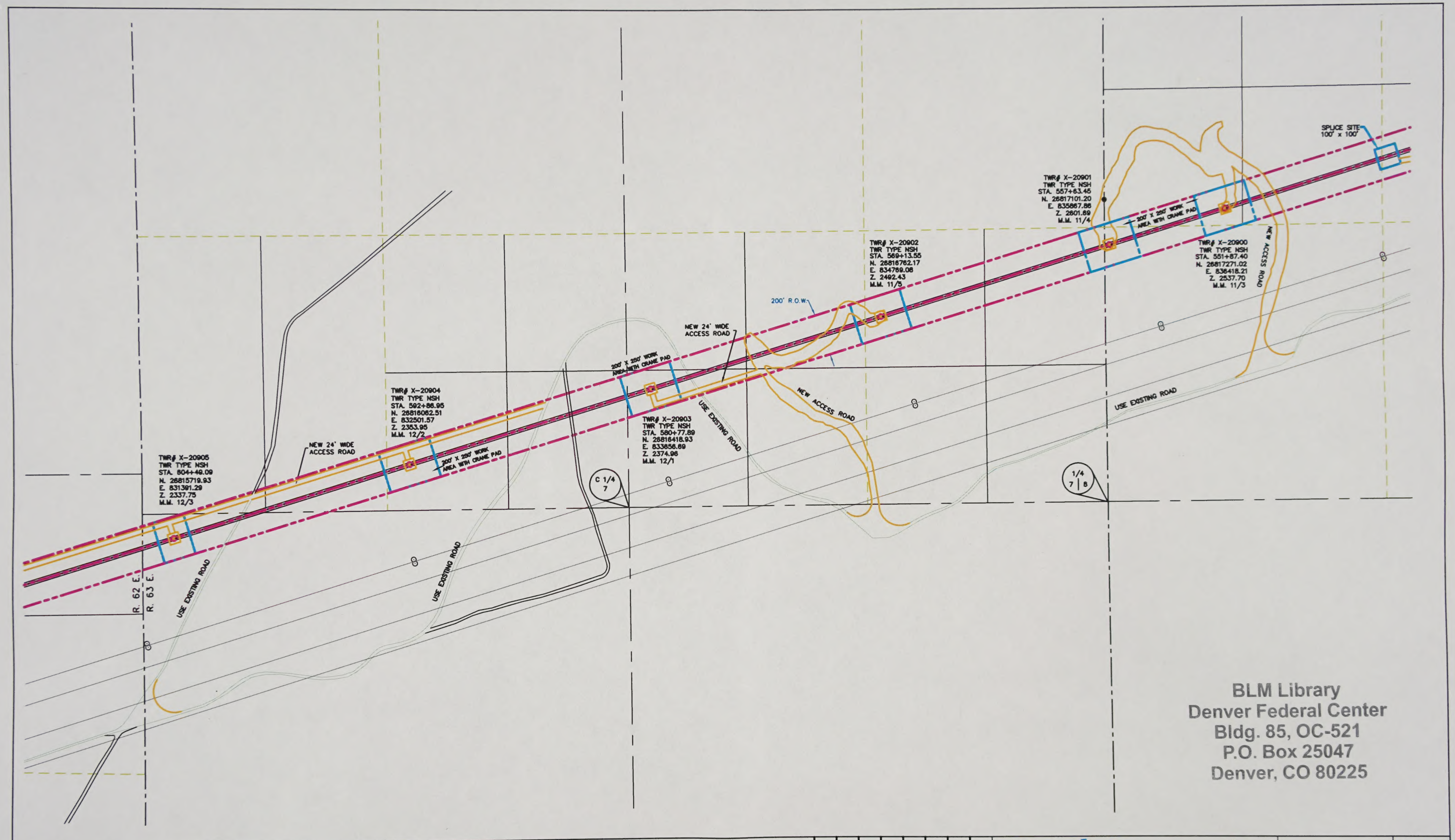
Nevada Power℠

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 63 E
5 4
8 9
CLARK CO.

SHEET NO.
5
OF
22


TWR# X-20905
TWR TYPE NSH
STA. 604+49.09
N. 26815719.93
E. 831391.29
Z. 2337.75
M.M. 12/3
NEW 24' WIDE ACCESS ROAD
TWR# X-20904
TWR TYPE NSH
STA. 592+86.95
N. 26816062.51
E. 832501.57
Z. 2353.95
M.M. 12/2
200' X 250' WORK AREA WITH CRANE PAD
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20903
TWR TYPE NSH
STA. 580+77.89
N. 26816418.93
E. 833856.69
Z. 2374.96
M.M. 12/1
NEW 24' WIDE ACCESS ROAD
USE EXISTING ROAD
NEW ACCESS ROAD
200' R.O.W.
TWR# X-20902
TWR TYPE NSH
STA. 569+13.55
N. 26816762.17
E. 834769.08
Z. 2492.43
M.M. 11/5
TWR# X-20901
TWR TYPE NSH
STA. 557+63.45
N. 26817101.20
E. 835867.86
Z. 2601.89
M.M. 11/4
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20900
TWR TYPE NSH
STA. 551+87.40
N. 26817271.02
E. 836418.21
Z. 2537.70
M.M. 11/3
NEW ACCESS ROAD
SPLICE SITE 100' x 100'
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
C 1/4 7
1/4 7 8
R. 62 E.
R. 63 E.

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
● NEW POLE
○ EXISTING POLE
☒ EXISTING POLE TO BE REMOVED
● EXISTING POLE TO BE REPLACED
▲ ANGLE
D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
250'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' WIDE)
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

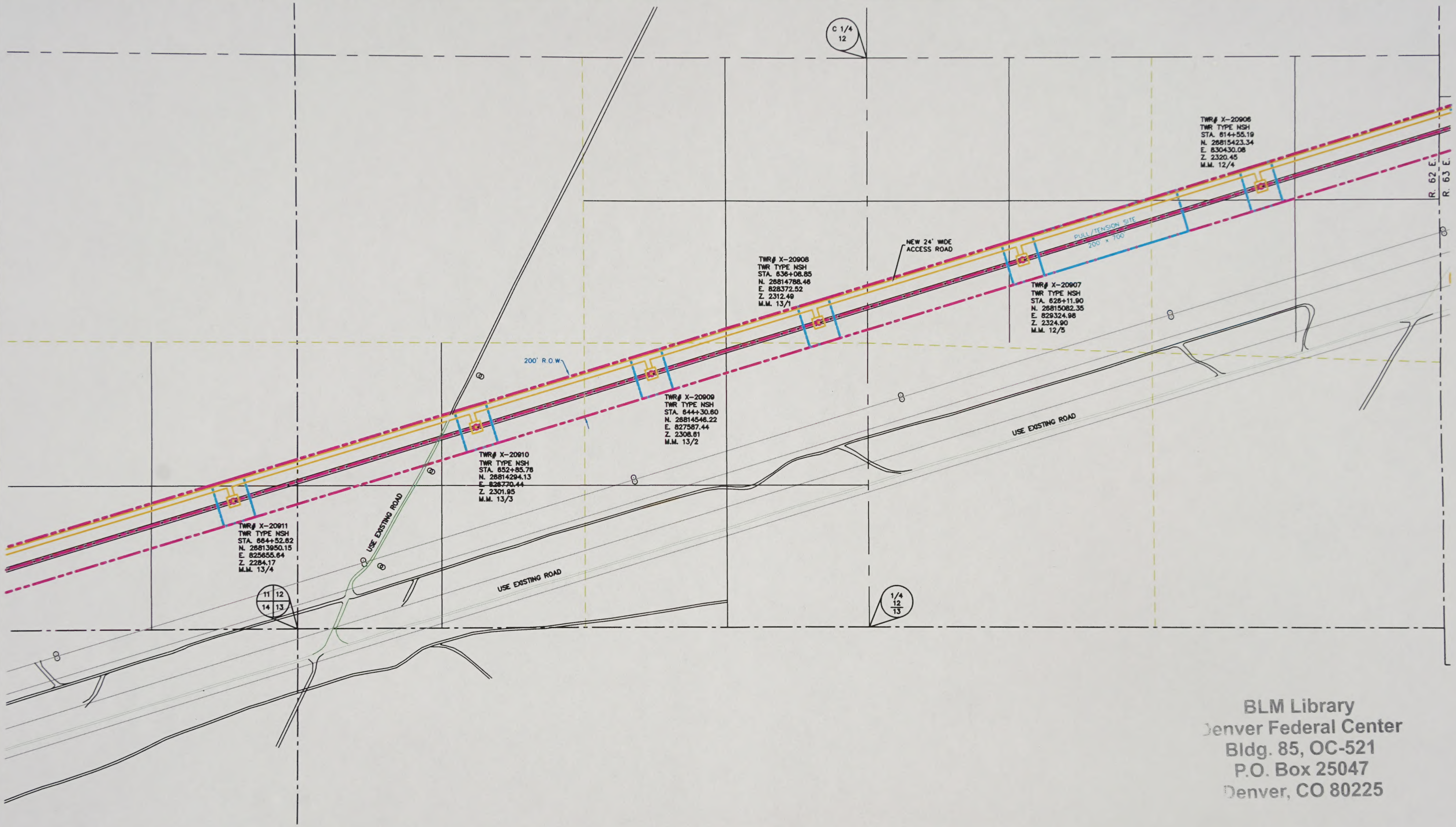
DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 63 E

7	8
18	17

CLARK CO.

SHEET NO.
6
OF
22


C 1/4
12
TWR# X-20906
TWR TYPE NSH
STA. 614+55.19
N. 26815423.34
E. 830430.08
Z. 2320.45
M.M. 12/4
R. 62 E.
R. 63 E.
NEW 24' WIDE
ACCESS ROAD
PULL/TENSION SITE
200' x 700'
TWR# X-20908
TWR TYPE NSH
STA. 636+08.85
N. 26814788.46
E. 828372.52
Z. 2312.49
M.M. 13/1
TWR# X-20907
TWR TYPE NSH
STA. 626+11.90
N. 26815082.35
E. 829324.98
Z. 2324.90
M.M. 12/5
200' R.O.W.
TWR# X-20909
TWR TYPE NSH
STA. 644+30.60
N. 26814546.22
E. 827587.44
Z. 2308.61
M.M. 13/2
TWR# X-20910
TWR TYPE NSH
STA. 652+85.76
N. 26814294.13
E. 826770.44
Z. 2301.95
M.M. 13/3
USE EXISTING ROAD
TWR# X-20911
TWR TYPE NSH
STA. 664+52.62
N. 26813950.15
E. 825655.64
Z. 2284.17
M.M. 13/4
USE EXISTING ROAD
USE EXISTING ROAD
11 12
14 13
1/4
12
13

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
30'
30'
200'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' NOM)

Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESGNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED – APRIL 30, 2002								

Nevada Power SM

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

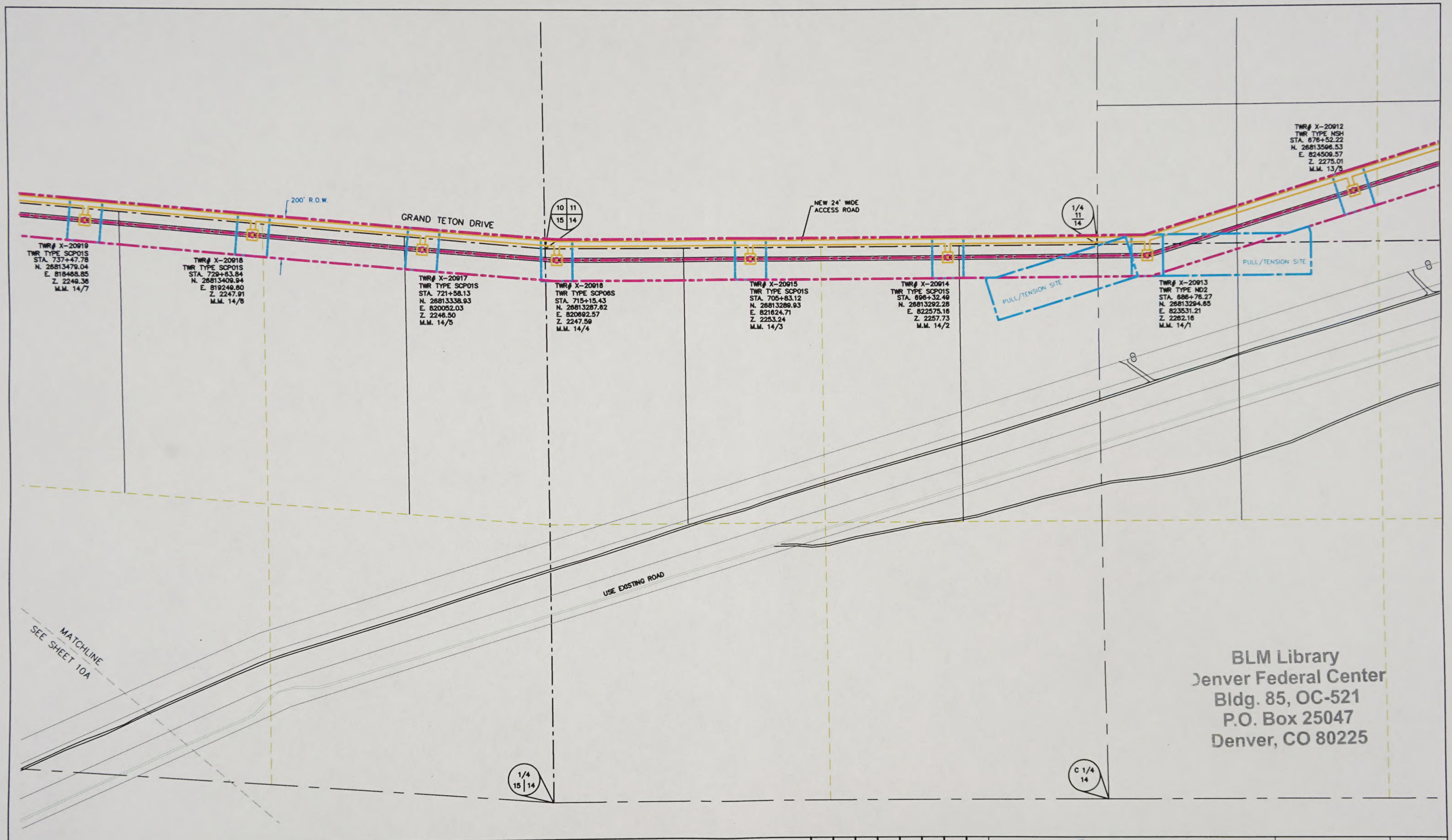
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 62 E

11	12
14	13

CLARK CO.

SHEET NO.
7
OF
22


200' R.O.W.
GRAND TETON DRIVE
NEW 24' WIDE ACCESS ROAD
10 11 15 14
1/4 11 14
1/4 15 14
C 1/4 14
TWR# X-20919
TWR TYPE SCP01S
STA. 737+47.78
N. 26813479.04
E. 818468.85
Z. 2249.36
M.M. 14/7
TWR# X-20918
TWR TYPE SCP01S
STA. 729+63.84
N. 26813409.94
E. 819249.60
Z. 2247.91
M.M. 14/6
TWR# X-20917
TWR TYPE SCP01S
STA. 721+58.13
N. 26813338.93
E. 820052.03
Z. 2246.50
M.M. 14/5
TWR# X-20916
TWR TYPE SCP06S
STA. 715+15.43
N. 26813287.62
E. 820692.57
Z. 2247.59
M.M. 14/4
TWR# X-20915
TWR TYPE SCP01S
STA. 705+83.12
N. 26813289.93
E. 821624.71
Z. 2253.24
M.M. 14/3
TWR# X-20914
TWR TYPE SCP01S
STA. 696+32.49
N. 26813292.28
E. 822575.16
Z. 2257.73
M.M. 14/2
TWR# X-20913
TWR TYPE ND2
STA. 686+76.27
N. 26813294.65
E. 823531.21
Z. 2262.16
M.M. 14/1
TWR# X-20912
TWR TYPE NSH
STA. 676+52.22
N. 26813596.53
E. 824509.57
Z. 2275.01
M.M. 13/5
PULL/TENSION SITE
PULL/TENSION SITE
USE EXISTING ROAD
MATCHLINE
SEE SHEET 10A

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED - APRIL 30, 2002								

Nevada Power℠

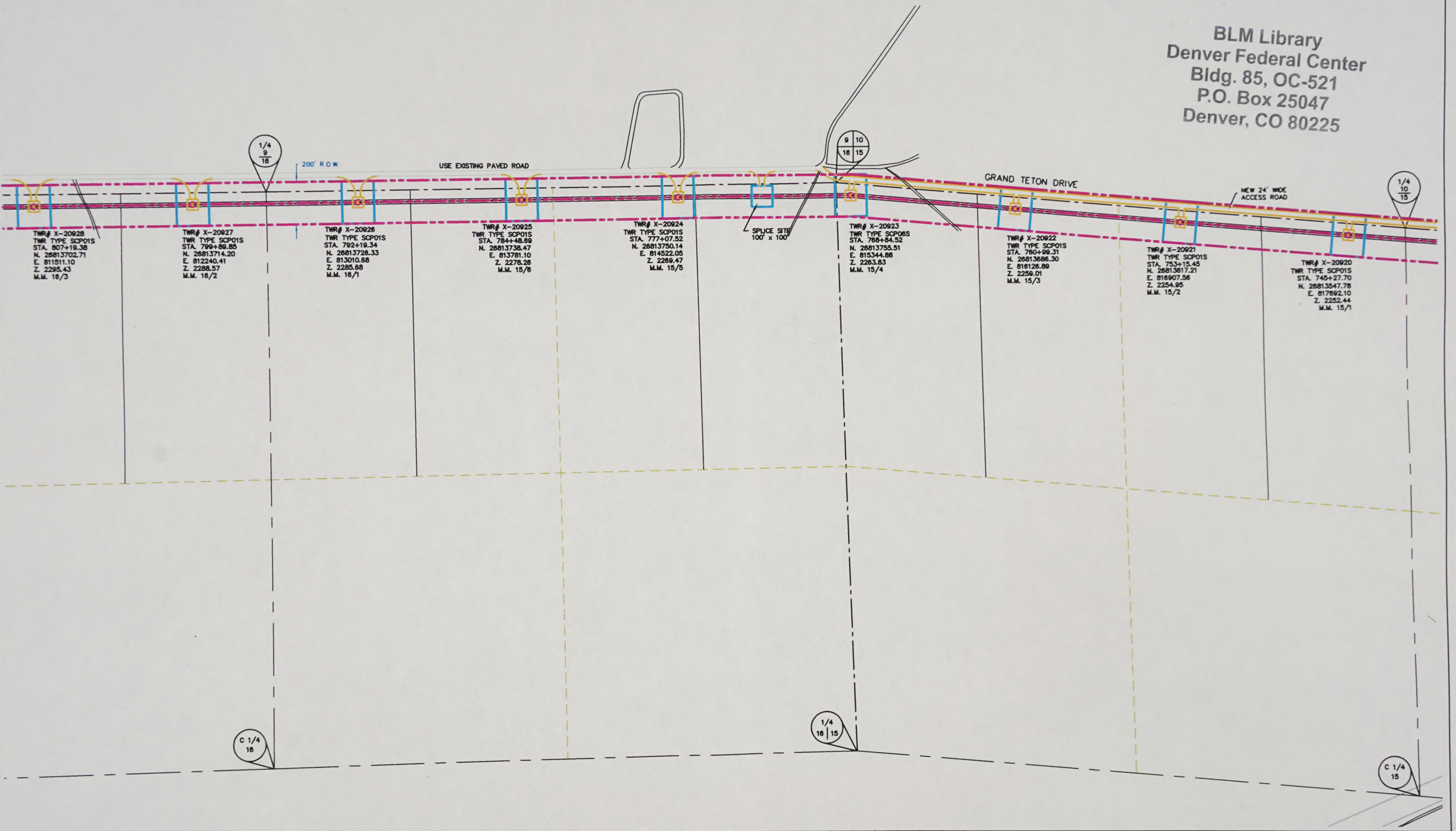
500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.
△

T 19 S
R 62 E
10 11
15 14
CLARK CO.

SHEET NO.
8
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


1/4 9 16
200' R.O.W.
USE EXISTING PAVED ROAD
9 10 16 15
GRAND TETON DRIVE
NEW 24' WIDE ACCESS ROAD
1/4 10 15
TWR# X-20928 TWR TYPE SCP01S STA. 807+19.38 N. 26813702.71 E. 811511.10 Z. 2295.43 M.M. 16/3
TWR# X-20927 TWR TYPE SCP01S STA. 799+89.85 N. 26813714.20 E. 812240.41 Z. 2288.57 M.M. 16/2
TWR# X-20926 TWR TYPE SCP01S STA. 792+19.34 N. 26813726.33 E. 813010.68 Z. 2285.68 M.M. 16/1
TWR# X-20925 TWR TYPE SCP01S STA. 784+48.69 N. 26813738.47 E. 813781.10 Z. 2278.26 M.M. 15/6
TWR# X-20924 TWR TYPE SCP01S STA. 777+07.52 N. 26813750.14 E. 814522.05 Z. 2269.47 M.M. 15/5
SPLICE SITE 100' x 100'
TWR# X-20923 TWR TYPE SCP06S STA. 768+84.52 N. 26813755.51 E. 815344.88 Z. 2263.83 M.M. 15/4
TWR# X-20922 TWR TYPE SCP01S STA. 760+99.31 N. 26813686.30 E. 816126.89 Z. 2259.01 M.M. 15/3
TWR# X-20921 TWR TYPE SCP01S STA. 753+15.45 N. 26813617.21 E. 816907.56 Z. 2254.95 M.M. 15/2
TWR# X-20920 TWR TYPE SCP01S STA. 745+27.70 N. 26813547.78 E. 817692.10 Z. 2252.44 M.M. 15/1
C 1/4 16
1/4 16 15
C 1/4 15

LEGEND:
● NEW POLE
○ EXISTING POLE
⊗ EXISTING POLE TO BE REMOVED
● EXISTING POLE TO BE REPLACED
▲ ANGLE
D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
50'
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' NOM)
100' SPLICE SITE
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

N
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power SM

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

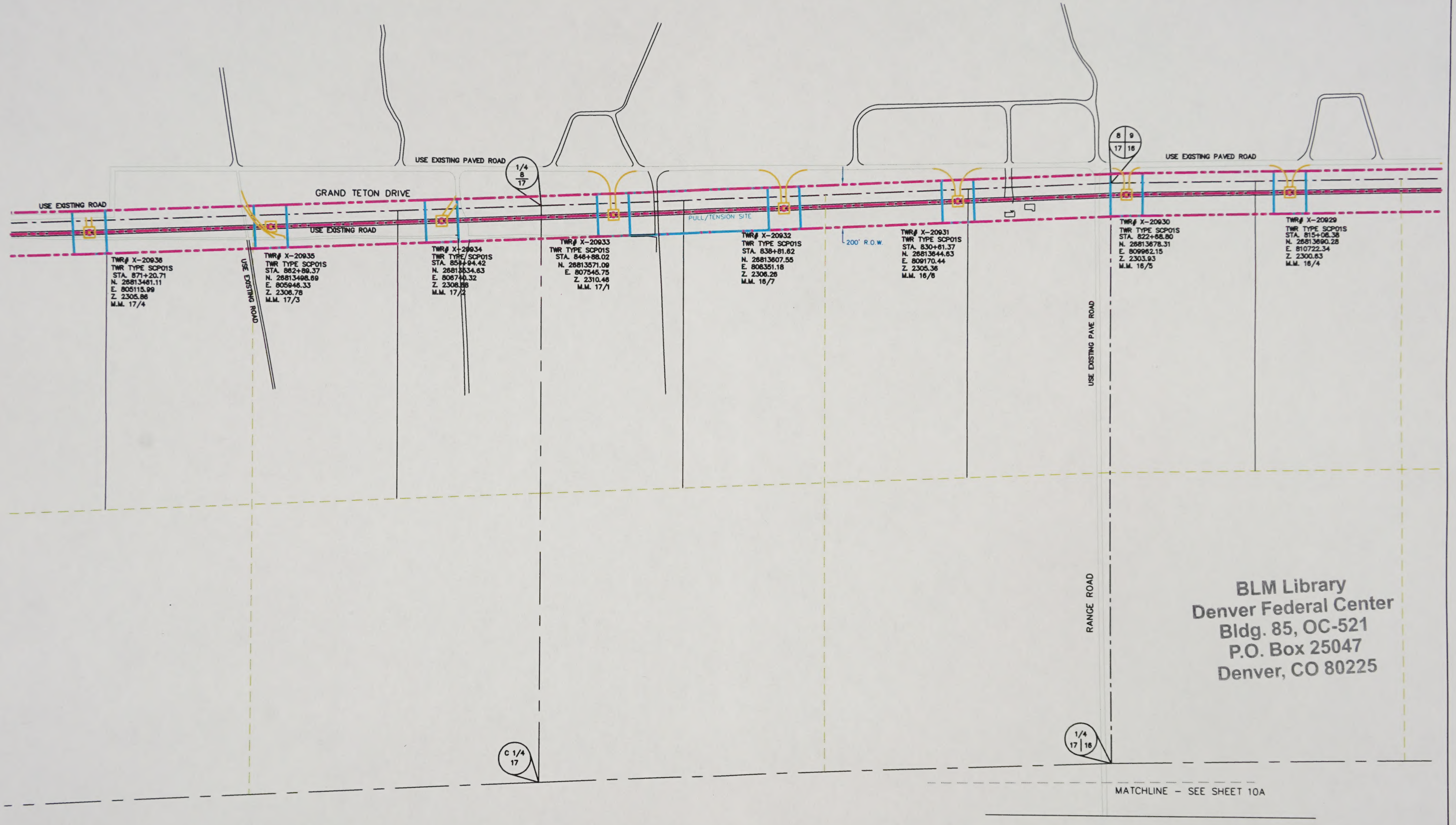
DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 62 E

9	10
16	15

CLARK CO.

SHEET NO.
9
OF
22


USE EXISTING ROAD
GRAND TETON DRIVE
USE EXISTING PAVED ROAD
USE EXISTING ROAD
USE EXISTING ROAD
1/4
8
17
TWR# X-20936
TWR TYPE SCP01S
STA. 871+20.71
N. 26813461.11
E. 805115.99
Z. 2305.86
M.M. 17/4
TWR# X-20935
TWR TYPE SCP01S
STA. 862+89.37
N. 26813498.69
E. 805946.33
Z. 2306.78
M.M. 17/3
TWR# X-20934
TWR TYPE SCP01S
STA. 854+94.42
N. 26813534.63
E. 806740.32
Z. 2308.88
M.M. 17/2
TWR# X-20933
TWR TYPE SCP01S
STA. 846+88.02
N. 26813571.09
E. 807545.75
Z. 2310.46
M.M. 17/1
PULL/TENSION SITE
TWR# X-20932
TWR TYPE SCP01S
STA. 838+81.62
N. 26813607.55
E. 808351.18
Z. 2306.26
M.M. 16/7
200' R.O.W.
TWR# X-20931
TWR TYPE SCP01S
STA. 830+61.37
N. 26813644.63
E. 809170.44
Z. 2305.36
M.M. 16/6
8 9
17 16
USE EXISTING PAVED ROAD
TWR# X-20930
TWR TYPE SCP01S
STA. 822+68.80
N. 26813678.31
E. 809962.15
Z. 2303.93
M.M. 16/5
TWR# X-20929
TWR TYPE SCP01S
STA. 815+06.38
N. 26813690.28
E. 810722.34
Z. 2300.83
M.M. 16/4
USE EXISTING PAVE ROAD
RANGE ROAD
C 1/4
17
1/4
17 16
MATCHLINE – SEE SHEET 10A

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' NOM)
(P) PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

100'
100'
SPLICE SITE

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

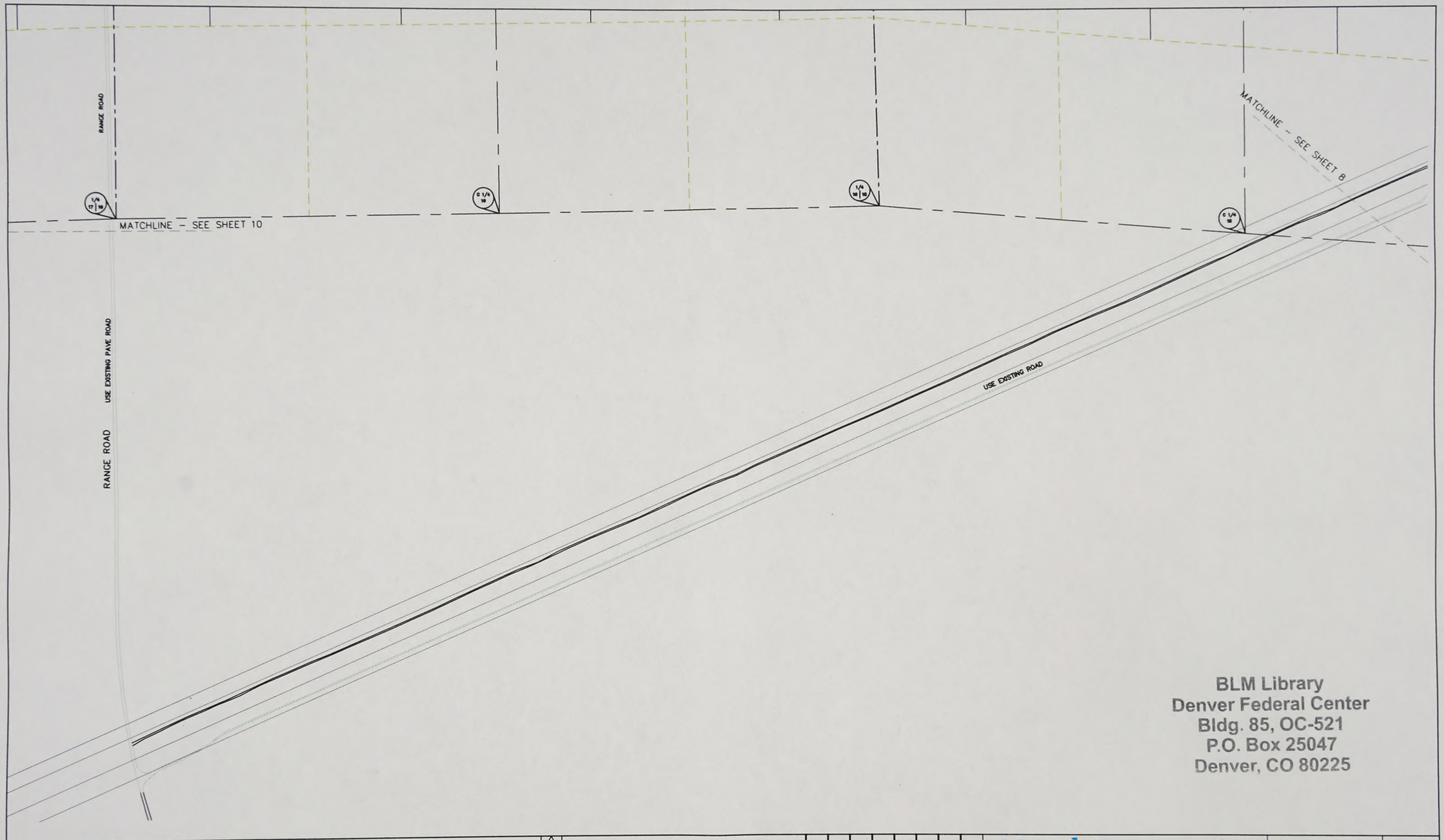
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 62 E

8	9
17	16

CLARK CO.

SHEET NO.
10
OF
22


RANGE ROAD
1/4 17 | 16
C 1/4 16
1/4 16 | 15
C 1/4 15
MATCHLINE – SEE SHEET 10
MATCHLINE – SEE SHEET 8
USE EXISTING PAVE ROAD
RANGE ROAD
USE EXISTING ROAD

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE

150'
200'
30'
30'

- TEMPORARY DISTURBANCE AREA
- PERMANENT DISTURBANCE AREA
- TOWER
- SPUR ROAD (41' X 24')
- ACCESS ROAD (24' WIDE)
- 100' 100' SPLICE SITE
- (P) PALEO SITE
- NEW ACCESS ROAD
- IMPROVE EXISTING ROAD
- USE EXISTING ROAD

N

600 0 300 600
(IN FEET)
Horiz: 1 inch = 300 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

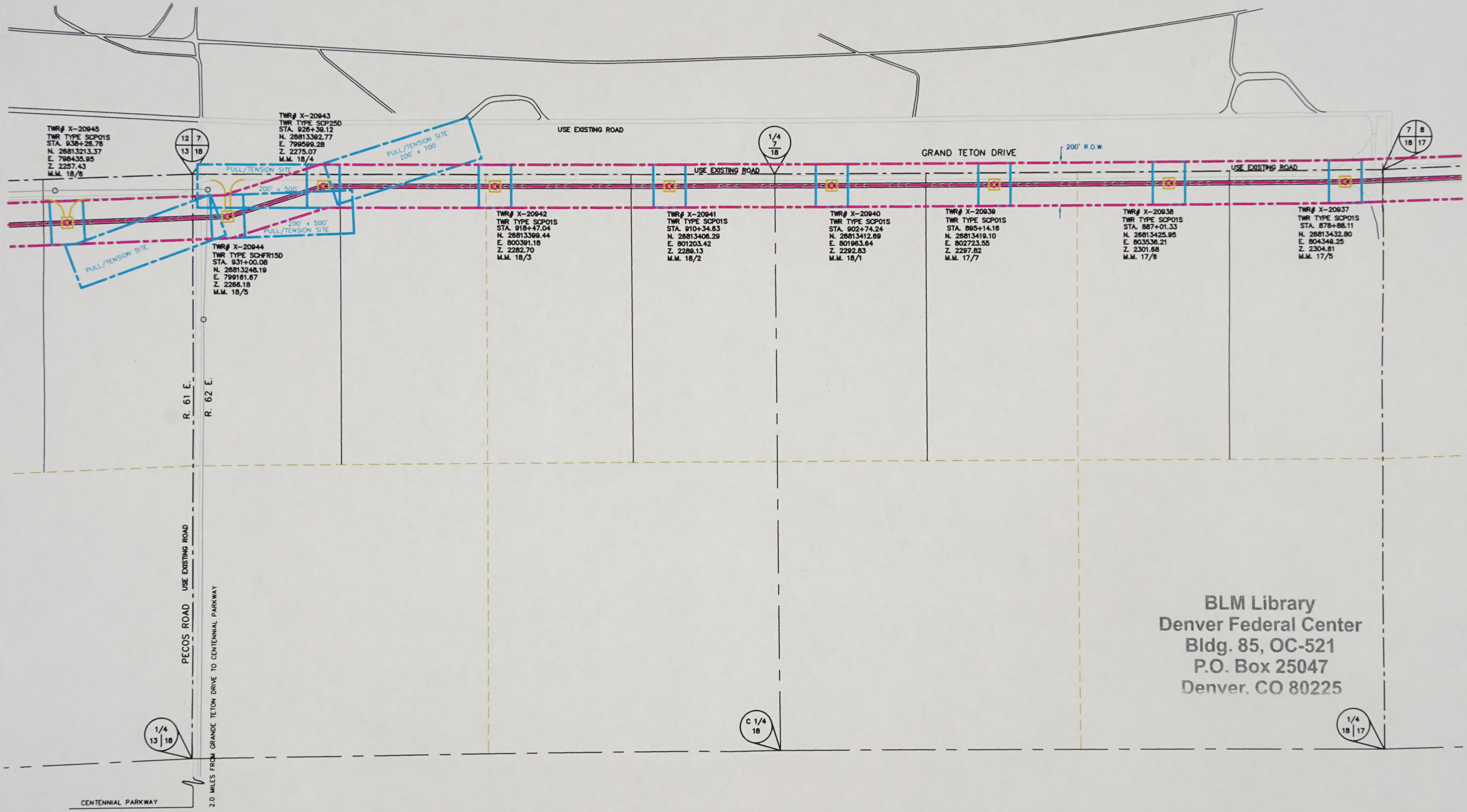
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 62 E

8	9
17	16

CLARK CO.

SHEET NO.
10A
OF
22


TWR# X-20945
TWR TYPE SCP01S
STA. 938+26.78
N. 26813213.37
E. 798435.95
Z. 2257.43
M.M. 18/6
12 | 7
13 | 18
TWR# X-20943
TWR TYPE SCP25D
STA. 926+39.12
N. 26813392.77
E. 799599.28
Z. 2275.07
M.M. 18/4
PULL/TENSION SITE
200' x 700'
PULL/TENSION SITE
200' x 500'
200' x 500'
PULL/TENSION SITE
PULL/TENSION SITE
TWR# X-20944
TWR TYPE SCHFR15D
STA. 931+00.08
N. 26813248.19
E. 799161.67
Z. 2266.18
M.M. 18/5
USE EXISTING ROAD
1/4
7
18
USE EXISTING ROAD
GRAND TETON DRIVE
200' R.O.W.
USE EXISTING ROAD
7 | 8
18 | 17
TWR# X-20942
TWR TYPE SCP01S
STA. 918+47.04
N. 26813399.44
E. 800391.18
Z. 2282.70
M.M. 18/3
TWR# X-20941
TWR TYPE SCP01S
STA. 910+34.63
N. 26813406.29
E. 801203.42
Z. 2289.13
M.M. 18/2
TWR# X-20940
TWR TYPE SCP01S
STA. 902+74.24
N. 26813412.69
E. 801963.64
Z. 2292.83
M.M. 18/1
TWR# X-20939
TWR TYPE SCP01S
STA. 895+14.16
N. 26813419.10
E. 802723.55
Z. 2297.82
M.M. 17/7
TWR# X-20938
TWR TYPE SCP01S
STA. 887+01.33
N. 26813425.95
E. 803536.21
Z. 2301.68
M.M. 17/8
TWR# X-20937
TWR TYPE SCP01S
STA. 878+88.11
N. 26813432.80
E. 804349.25
Z. 2304.61
M.M. 17/5
R. 61 E.
R. 62 E.
PECOS ROAD USE EXISTING ROAD
2.0 MILES FROM GRANDE TETON DRIVE TO CENTENNIAL PARKWAY
1/4
13 | 18
C 1/4
18
1/4
18 | 17
CENTENNIAL PARKWAY

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)

Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED - APRIL 30, 2002								

Nevada Power SM

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

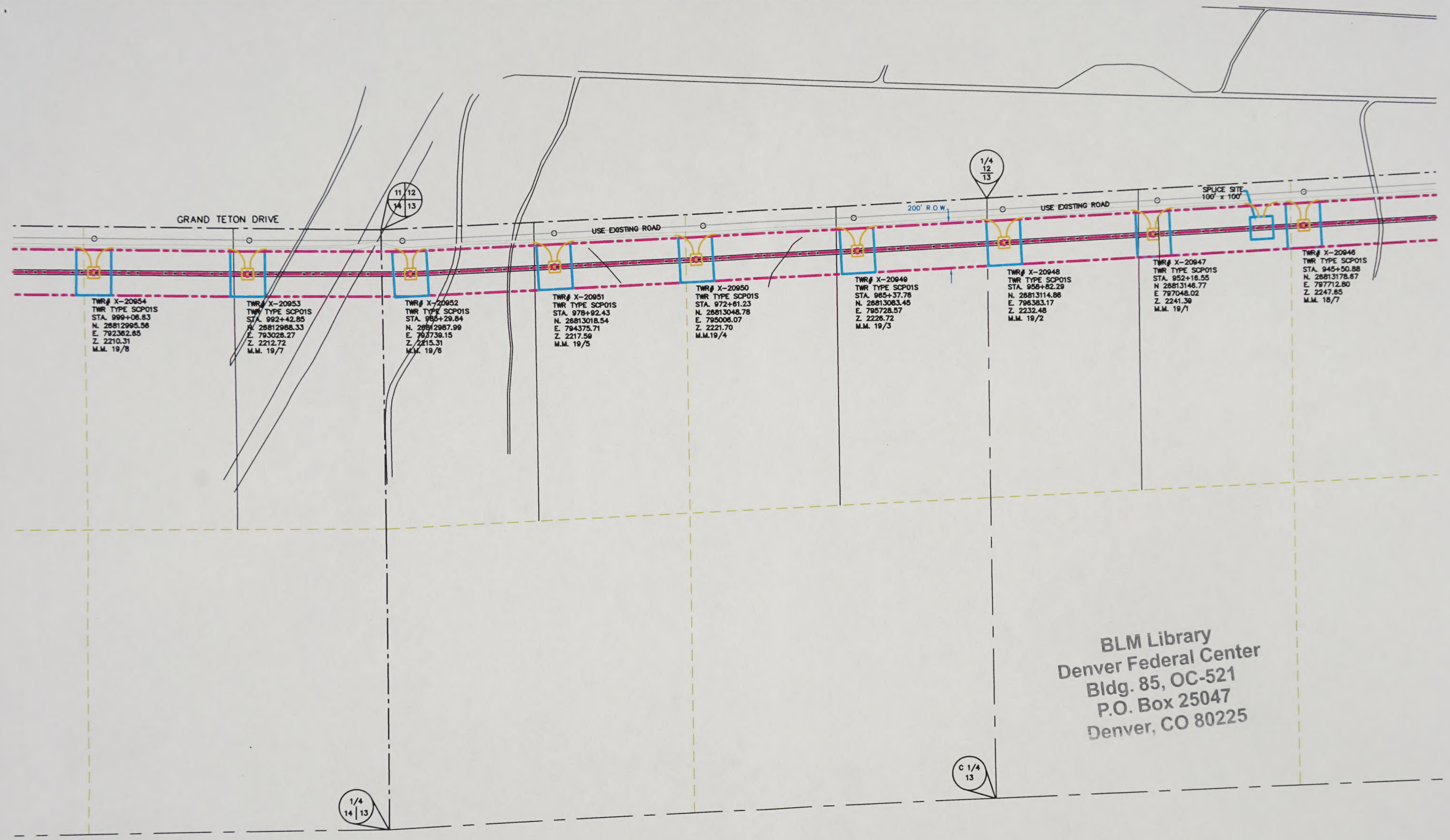
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.
△

T 19 S
R 62 E

7	8
18	17

CLARK CO.

SHEET NO.
11
OF
22

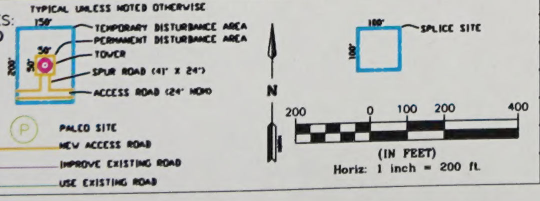

GRAND TETON DRIVE
11 | 12
14 | 13
USE EXISTING ROAD
200' R.O.W.
1/4
12
13
USE EXISTING ROAD
SPLICE SITE
100' x 100'
TWR# X-20954
TWR TYPE SCP01S
STA. 999+06.63
N. 26812995.56
E. 792362.65
Z. 2210.31
M.M. 19/8
TWR# X-20953
TWR TYPE SCP01S
STA. 992+42.85
N. 26812988.33
E. 793026.27
Z. 2212.72
M.M. 19/7
TWR# X-20952
TWR TYPE SCP01S
STA. 985+29.84
N. 26812987.99
E. 793739.15
Z. 2215.31
M.M. 19/6
TWR# X-20951
TWR TYPE SCP01S
STA. 978+92.43
N. 26813018.54
E. 794375.71
Z. 2217.59
M.M. 19/5
TWR# X-20950
TWR TYPE SCP01S
STA. 972+61.23
N. 26813048.78
E. 795006.07
Z. 2221.70
M.M.19/4
TWR# X-20949
TWR TYPE SCP01S
STA. 965+37.76
N. 26813083.45
E. 795728.57
Z. 2226.72
M.M. 19/3
TWR# X-20948
TWR TYPE SCP01S
STA. 958+82.29
N. 26813114.86
E. 796383.17
Z. 2232.48
M.M. 19/2
TWR# X-20947
TWR TYPE SCP01S
STA. 952+16.55
N 26813146.77
E 797048.02
Z. 2241.39
M.M. 19/1
TWR# X-20946
TWR TYPE SCP01S
STA. 945+50.88
N. 26813178.67
E. 797712.80
Z. 2247.65
M.M. 18/7
1/4
14 | 13
C 1/4
13

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND


TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
N
100'
100'
SPLICE SITE
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

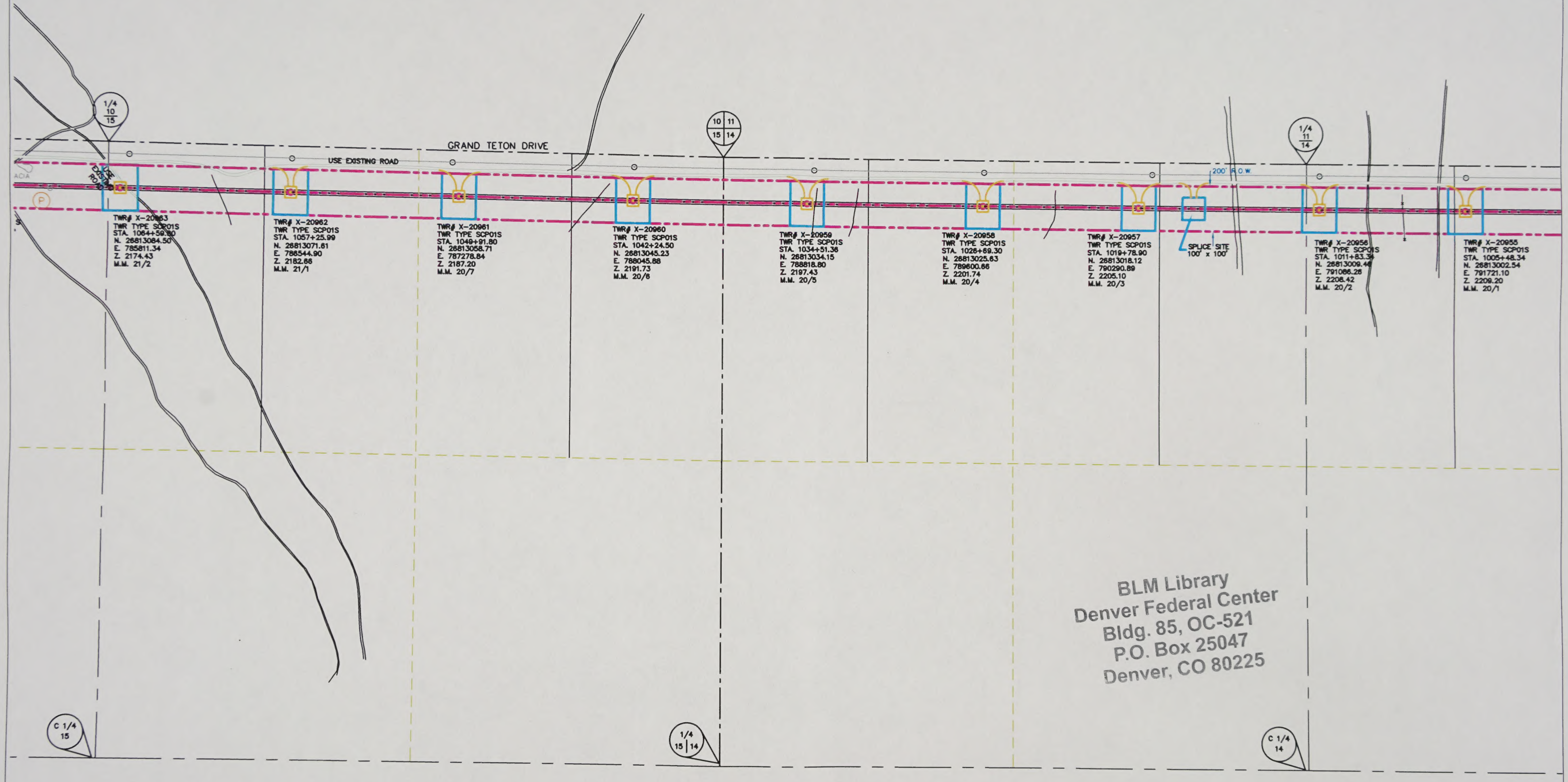
DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 61 E

11	12
14	13

CLARK CO.

SHEET NO.
12
OF
22


1/4
10
15
GRAND TETON DRIVE
USE EXISTING ROAD
USE EXISTING ROAD
10 11
15 14
1/4
11
14
200' R.O.W.
TWR# X-20963
TWR TYPE SCP01S
STA. 1064+59.80
N. 26813084.50
E. 785811.34
Z. 2174.43
M.M. 21/2
TWR# X-20962
TWR TYPE SCP01S
STA. 1057+25.99
N. 26813071.61
E. 786544.90
Z. 2182.66
M.M. 21/1
TWR# X-20961
TWR TYPE SCP01S
STA. 1049+91.80
N. 26813058.71
E. 787278.84
Z. 2187.20
M.M. 20/7
TWR# X-20960
TWR TYPE SCP01S
STA. 1042+24.50
N. 26813045.23
E. 788045.88
Z. 2191.73
M.M. 20/6
TWR# X-20959
TWR TYPE SCP01S
STA. 1034+51.36
N. 26813034.15
E. 788818.80
Z. 2197.43
M.M. 20/5
TWR# X-20958
TWR TYPE SCP01S
STA. 1026+69.30
N. 26813025.63
E. 789600.66
Z. 2201.74
M.M. 20/4
TWR# X-20957
TWR TYPE SCP01S
STA. 1019+78.90
N. 26813018.12
E. 790290.89
Z. 2205.10
M.M. 20/3
SPLICE SITE
100' x 100'
TWR# X-20956
TWR TYPE SCP01S
STA. 1011+83.34
N. 26813009.46
E. 791066.26
Z. 2208.42
M.M. 20/2
TWR# X-20955
TWR TYPE SCP01S
STA. 1005+48.34
N. 26813002.54
E. 791721.10
Z. 2209.20
M.M. 20/1
C 1/4
15
1/4
15 | 14
C 1/4
14

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
50'
50'
200'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' NOM)
(P) PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

0 REVISED – APRIL 30, 2002
REV DESCRIPTION REVISION RECORD
DRAFTR DATE DESNED DATE CKED DATE APP'D DATE

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

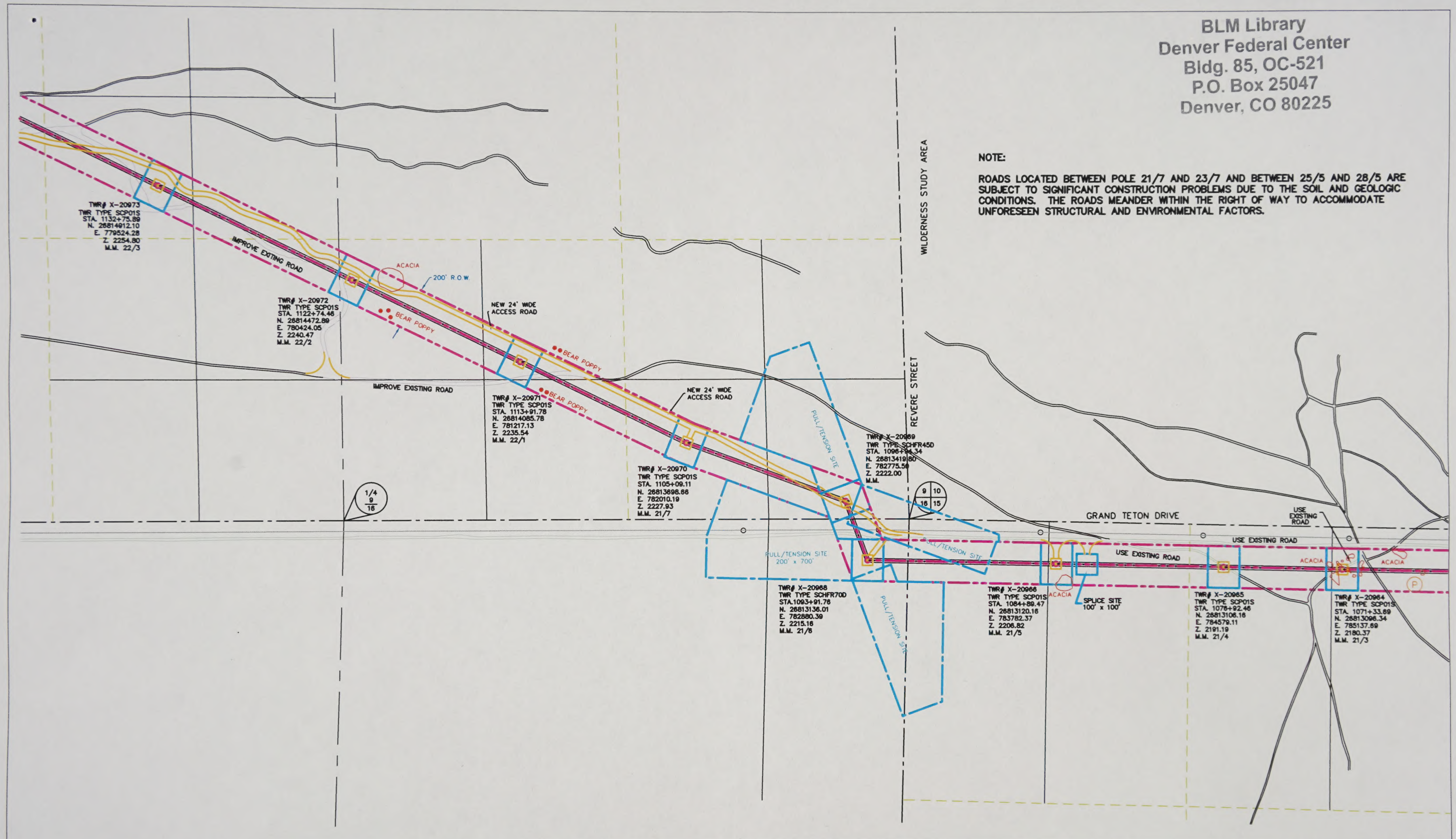
T 19 S
R 61 E

10	11
15	14

CLARK CO.

SHEET NO.
13
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


TWR# X-20973
TWR TYPE SCP01S
STA. 1132+75.89
N. 26814912.10
E. 779524.28
Z. 2254.80
M.M. 22/3
IMPROVE EXITING ROAD
ACACIA
200' R.O.W.
TWR# X-20972
TWR TYPE SCP01S
STA. 1122+74.46
N. 26814472.89
E. 780424.05
Z. 2240.47
M.M. 22/2
BEAR POPPY
NEW 24' WIDE
ACCESS ROAD
BEAR POPPY
IMPROVE EXISTING ROAD
TWR# X-20971
TWR TYPE SCP01S
STA. 1113+91.78
N. 26814085.78
E. 781217.13
Z. 2235.54
M.M. 22/1
BEAR POPPY
1/4
9
16
NEW 24' WIDE
ACCESS ROAD
TWR# X-20970
TWR TYPE SCP01S
STA. 1105+09.11
N. 26813698.66
E. 782010.19
Z. 2227.93
M.M. 21/7
PULL/TENSION SITE
WILDERNESS STUDY AREA
REVERE STREET
TWR# X-20969
TWR TYPE SCHFR45D
STA. 1096+94.34
N. 26813419.80
E. 782775.58
Z. 2222.00
M.M.
9 10
16 15
PULL/TENSION SITE
200' x 700'
PULL/TENSION SITE
PULL/TENSION SITE
TWR# X-20968
TWR TYPE SCHFR70D
STA.1093+91.76
N. 26813136.01
E. 782880.39
Z. 2215.16
M.M. 21/6
GRAND TETON DRIVE
USE EXISTING ROAD
ACACIA
TWR# X-20966
TWR TYPE SCP01S
STA. 1084+89.47
N. 26813120.16
E. 783782.37
Z. 2206.82
M.M. 21/5
SPLICE SITE
100' x 100'
USE EXISTING ROAD
TWR# X-20965
TWR TYPE SCP01S
STA. 1076+92.46
N. 26813106.16
E. 784579.11
Z. 2191.19
M.M. 21/4
USE EXISTING ROAD
ACACIA
ACACIA
P
TWR# X-20964
TWR TYPE SCP01S
STA. 1071+33.69
N. 26813096.34
E. 785137.69
Z. 2180.37
M.M. 21/3

NOTE:

ROADS LOCATED BETWEEN POLE 21/7 AND 23/7 AND BETWEEN 25/5 AND 28/5 ARE SUBJECT TO SIGNIFICANT CONSTRUCTION PROBLEMS DUE TO THE SOIL AND GEOLOGIC CONDITIONS. THE ROADS MEANDER WITHIN THE RIGHT OF WAY TO ACCOMMODATE UNFORESEEN STRUCTURAL AND ENVIRONMENTAL FACTORS.

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

N

100'
100'
SPLICE SITE

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

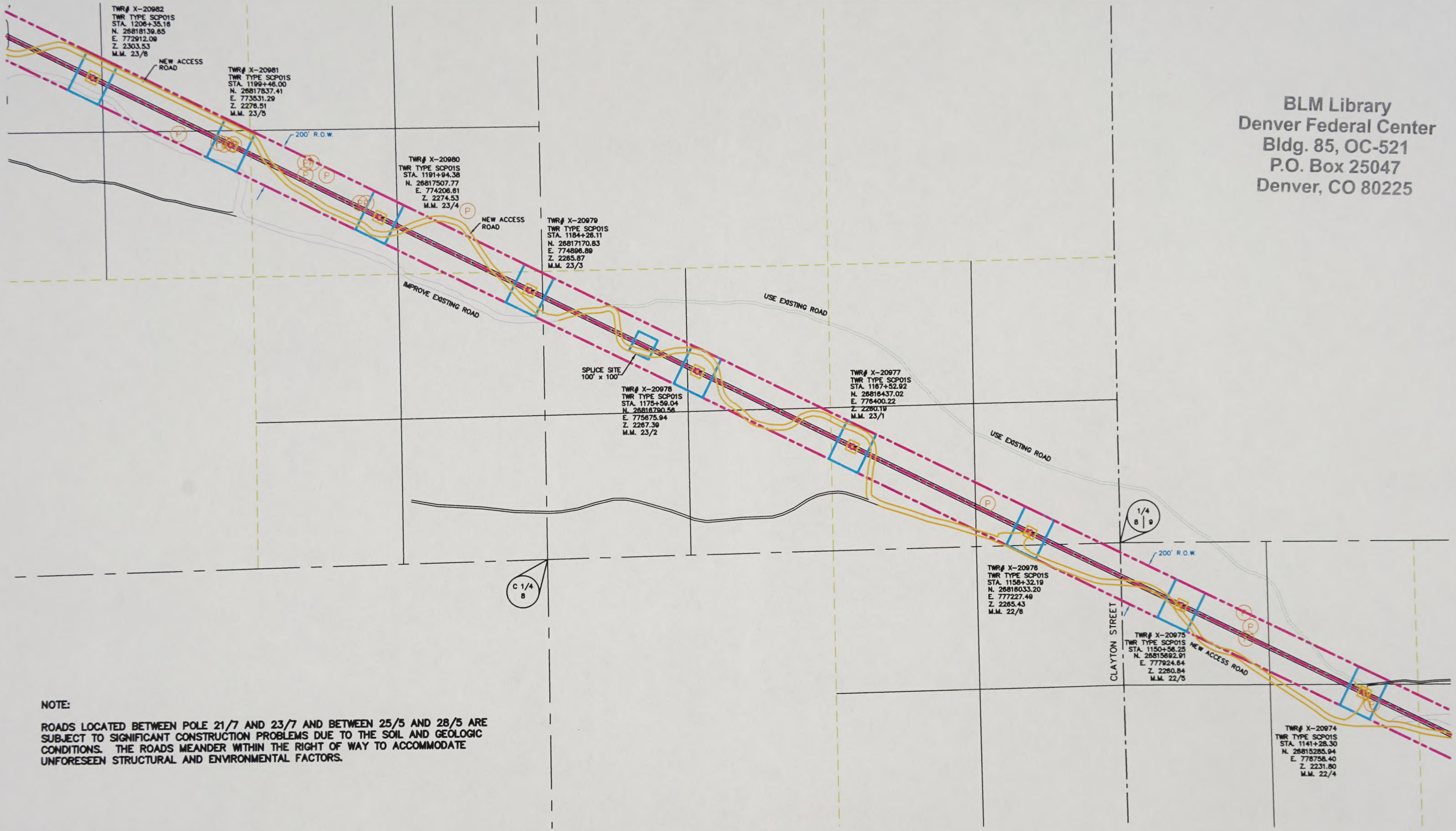
T 19 S
R 61 E

9	10
16	15

CLARK CO.

SHEET NO.
14
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


TWR# X-20982
TWR TYPE SCP01S
STA. 1206+35.16
N. 26818139.65
E. 772912.09
Z. 2303.53
M.M. 23/6
NEW ACCESS ROAD
TWR# X-20981
TWR TYPE SCP01S
STA. 1199+46.00
N. 26817837.41
E. 773531.29
Z. 2276.51
M.M. 23/5
200' R.O.W.
P
TWR# X-20980
TWR TYPE SCP01S
STA. 1191+94.38
N. 26817507.77
E. 774206.61
Z. 2274.53
M.M. 23/4
NEW ACCESS ROAD
TWR# X-20979
TWR TYPE SCP01S
STA. 1184+26.11
N. 26817170.83
E. 774896.89
Z. 2265.87
M.M. 23/3
IMPROVE EXISTING ROAD
USE EXISTING ROAD
SPLICE SITE 100' x 100'
TWR# X-20978
TWR TYPE SCP01S
STA. 1175+59.04
N. 26816790.56
E. 775675.94
Z. 2267.39
M.M. 23/2
TWR# X-20977
TWR TYPE SCP01S
STA. 1167+52.92
N. 26816437.02
E. 776400.22
Z. 2260.19
M.M. 23/1
USE EXISTING ROAD
C 1/4 8
1/4 8 9
200' R.O.W.
TWR# X-20976
TWR TYPE SCP01S
STA. 1158+32.19
N. 26816033.20
E. 777227.49
Z. 2265.43
M.M. 22/6
CLAYTON STREET
TWR# X-20975
TWR TYPE SCP01S
STA. 1150+56.25
N. 26815692.91
E. 777924.64
Z. 2260.84
M.M. 22/5
NEW ACCESS ROAD
TWR# X-20974
TWR TYPE SCP01S
STA. 1141+28.30
N. 26815285.94
E. 778758.40
Z. 2231.80
M.M. 22/4

NOTE:

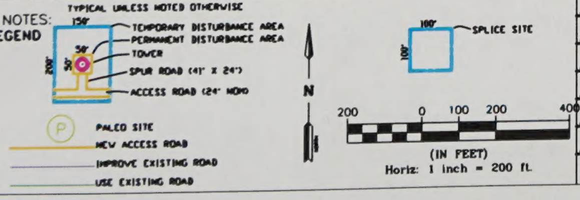
ROADS LOCATED BETWEEN POLE 21/7 AND 23/7 AND BETWEEN 25/5 AND 28/5 ARE SUBJECT TO SIGNIFICANT CONSTRUCTION PROBLEMS DUE TO THE SOIL AND GEOLOGIC CONDITIONS. THE ROADS MEANDER WITHIN THE RIGHT OF WAY TO ACCOMMODATE UNFORESEEN STRUCTURAL AND ENVIRONMENTAL FACTORS.

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE


150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)
100'
100'
SPLICE SITE
N
200
0
100
200
400

- Ⓟ PALEO SITE
- NEW ACCESS ROAD
- IMPROVE EXISTING ROAD
- USE EXISTING ROAD

(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

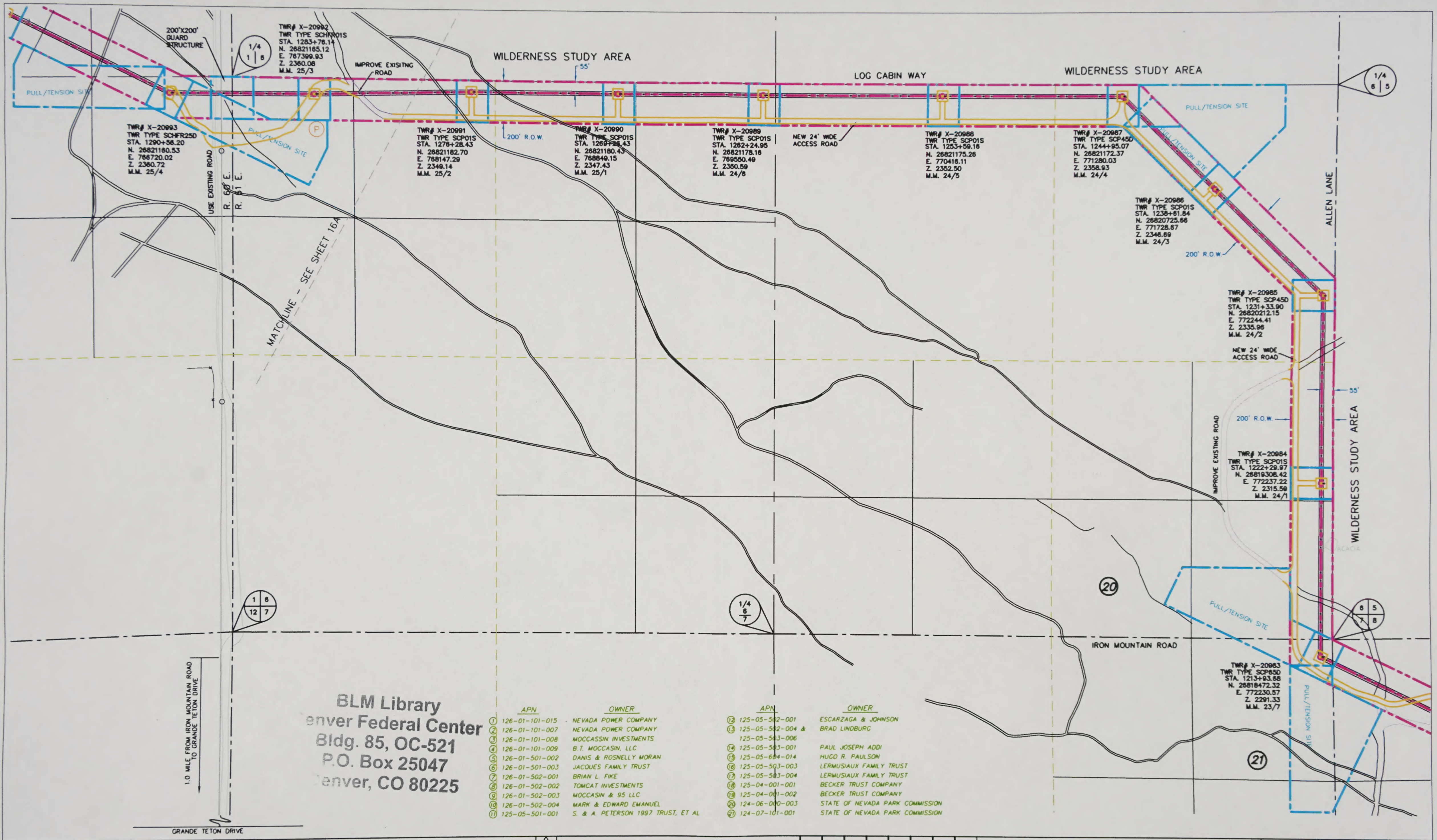
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 61 E

5	4
8	9

CLARK CO.

SHEET NO.
15
OF
22


WILDERNESS STUDY AREA
LOG CABIN WAY
WILDERNESS STUDY AREA
200'X200' GUARD STRUCTURE
1/4 1 6
TWR# X-20992
TWR TYPE SCHFR01S
STA. 1283+76.14
N. 26821165.12
E. 767399.93
Z. 2360.08
M.M. 25/3
IMPROVE EXISITNG ROAD
55'
PULL/TENSION SITE
TWR# X-20993
TWR TYPE SCHFR25D
STA. 1290+56.20
N. 26821160.53
E. 766720.02
Z. 2360.72
M.M. 25/4
PULL/TENSION SITE
P
USE EXISTING ROAD
R. 60 E.
R. 61 E.
TWR# X-20991
TWR TYPE SCP01S
STA. 1276+28.43
N. 26821182.70
E. 768147.29
Z. 2349.14
M.M. 25/2
200' R.O.W.
TWR# X-20990
TWR TYPE SCP01S
STA. 1269+26.43
N. 26821180.43
E. 768849.15
Z. 2347.43
M.M. 25/1
TWR# X-20989
TWR TYPE SCP01S
STA. 1262+24.95
N. 26821178.16
E. 769550.49
Z. 2350.59
M.M. 24/6
NEW 24' WIDE ACCESS ROAD
TWR# X-20988
TWR TYPE SCP01S
STA. 1253+59.16
N. 26821175.26
E. 770416.11
Z. 2352.50
M.M. 24/5
TWR# X-20987
TWR TYPE SCP45D
STA. 1244+95.07
N. 26821172.37
E. 771280.03
Z. 2358.93
M.M. 24/4
1/4 8 5
PULL/TENSION SITE
PULL/TENSION SITE
ALLEN LANE
TWR# X-20986
TWR TYPE SCP01S
STA. 1238+61.84
N. 26820725.66
E. 771728.67
Z. 2346.69
M.M. 24/3
200' R.O.W.
MATCHLINE - SEE SHEET 16A
TWR# X-20985
TWR TYPE SCP45D
STA. 1231+33.90
N. 26820212.15
E. 772244.41
Z. 2335.96
M.M. 24/2
NEW 24' WIDE ACCESS ROAD
55'
200' R.O.W.
IMPROVE EXISTING ROAD
WILDERNESS STUDY AREA
TWR# X-20984
TWR TYPE SCP01S
STA. 1222+29.97
N. 26819308.42
E. 772237.22
Z. 2315.59
M.M. 24/1
ACACIA
20
PULL/TENSION SITE
6 5 7 8
1 6 12 7
1/4 6 7
IRON MOUNTAIN ROAD
TWR# X-20983
TWR TYPE SCP65D
STA. 1213+93.68
N. 26818472.32
E. 772230.57
Z. 2291.33
M.M. 23/7
PULL/TENSION SITE
21
1.0 MILE FROM IRON MOUNTAIN ROAD TO GRANDE TETON DRIVE
GRANDE TETON DRIVE

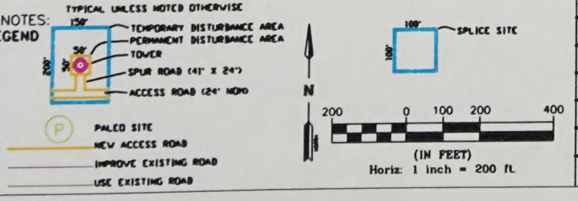
BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	126-01-101-009	B.T. MOCCASIN, LLC
⑤	126-01-501-002	DANIS & ROSNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ⊗ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE


150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' WIDE)
P
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
N
100'
100'
SPLICE SITE
200 0 100 200 400

(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED - APRIL 30, 2002								

Nevada Power℠

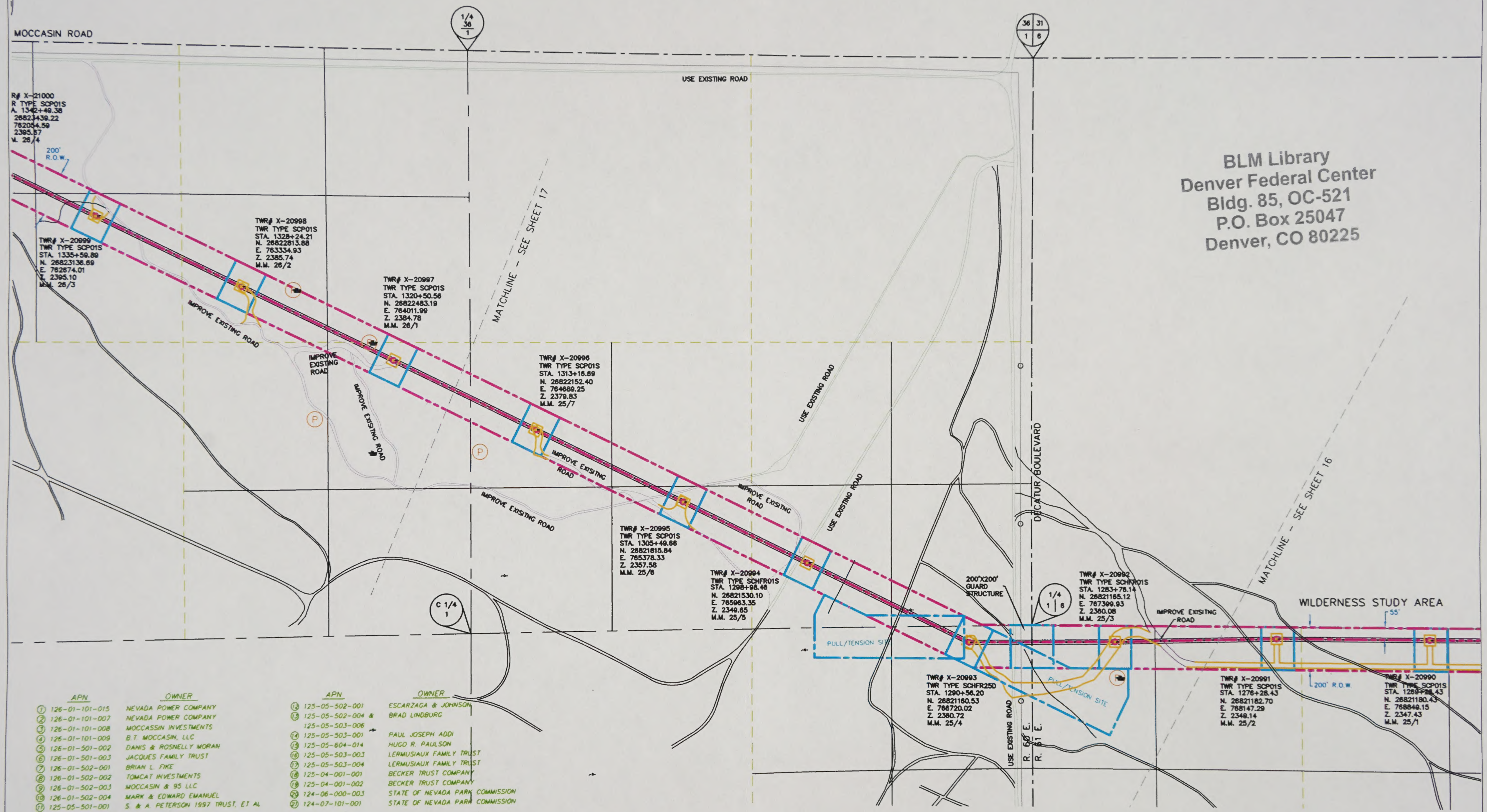
500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 61 E
6 5
7 8
CLARK CO.

SHEET NO.
16
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


MOCCASIN ROAD
1/4 36 1
36 31 1 6
USE EXISTING ROAD
R# X-21000
R TYPE SCP01S
A. 1342+49.38
26823439.22
762054.59
2395.87
M. 26/4
200' R.O.W.
TWR# X-20999
TWR TYPE SCP01S
STA. 1335+59.89
N. 26823136.69
E. 762674.01
Z. 2395.10
M.M. 26/3
TWR# X-20998
TWR TYPE SCP01S
STA. 1328+24.21
N. 26822813.88
E. 763334.93
Z. 2385.74
M.M. 26/2
IMPROVE EXISTING ROAD
TWR# X-20997
TWR TYPE SCP01S
STA. 1320+50.56
N. 26822483.19
E. 764011.99
Z. 2384.78
M.M. 26/1
MATCHLINE - SEE SHEET 17
IMPROVE EXISTING ROAD
IMPROVE EXISTING ROAD
P
P
TWR# X-20996
TWR TYPE SCP01S
STA. 1313+16.69
N. 26822152.40
E. 764689.25
Z. 2379.83
M.M. 25/7
IMPROVE EXISTING ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
IMPROVE EXISITNG ROAD
USE EXISTING ROAD
TWR# X-20995
TWR TYPE SCP01S
STA. 1305+49.66
N. 26821815.84
E. 765378.33
Z. 2357.58
M.M. 25/6
TWR# X-20994
TWR TYPE SCHFR01S
STA. 1298+98.46
N. 26821530.10
E. 765963.35
Z. 2349.65
M.M. 25/5
C 1/4 1
DECATUR BOULEVARD
200'X200' GUARD STRUCTURE
1/4 1 6
PULL/TENSION SITE
TWR# X-20993
TWR TYPE SCHFR25D
STA. 1290+56.20
N. 26821160.53
E. 766720.02
Z. 2360.72
M.M. 25/4
PULL/TENSION SITE
USE EXISTING ROAD
R. 60 E.
R. 61 E.
TWR# X-20992
TWR TYPE SCHFR01S
STA. 1283+76.14
N. 26821165.12
E. 767399.93
Z. 2360.08
M.M. 25/3
IMPROVE EXISITNG ROAD
MATCHLINE - SEE SHEET 16
WILDERNESS STUDY AREA
55'
200' R.O.W.
TWR# X-20991
TWR TYPE SCP01S
STA. 1276+28.43
N. 26821182.70
E. 768147.29
Z. 2349.14
M.M. 25/2
TWR# X-20990
TWR TYPE SCP01S
STA. 1269+28.43
N. 26821180.43
E. 768849.15
Z. 2347.43
M.M. 25/1

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	126-01-101-009	B.T. MOCCASIN, LLC
⑤	126-01-501-002	DANIS & ROSNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

	APN	OWNER
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION

LEGEND:

● NEW POLE
○ EXISTING POLE
☒ EXISTING POLE TO BE REMOVED
● EXISTING POLE TO BE REPLACED
▲ ANGLE
D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' NOM)
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

N

100'
100'
SPLICE SITE

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV								
0	REVISED - APRIL 30, 2002							
REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE

Nevada Power SM

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

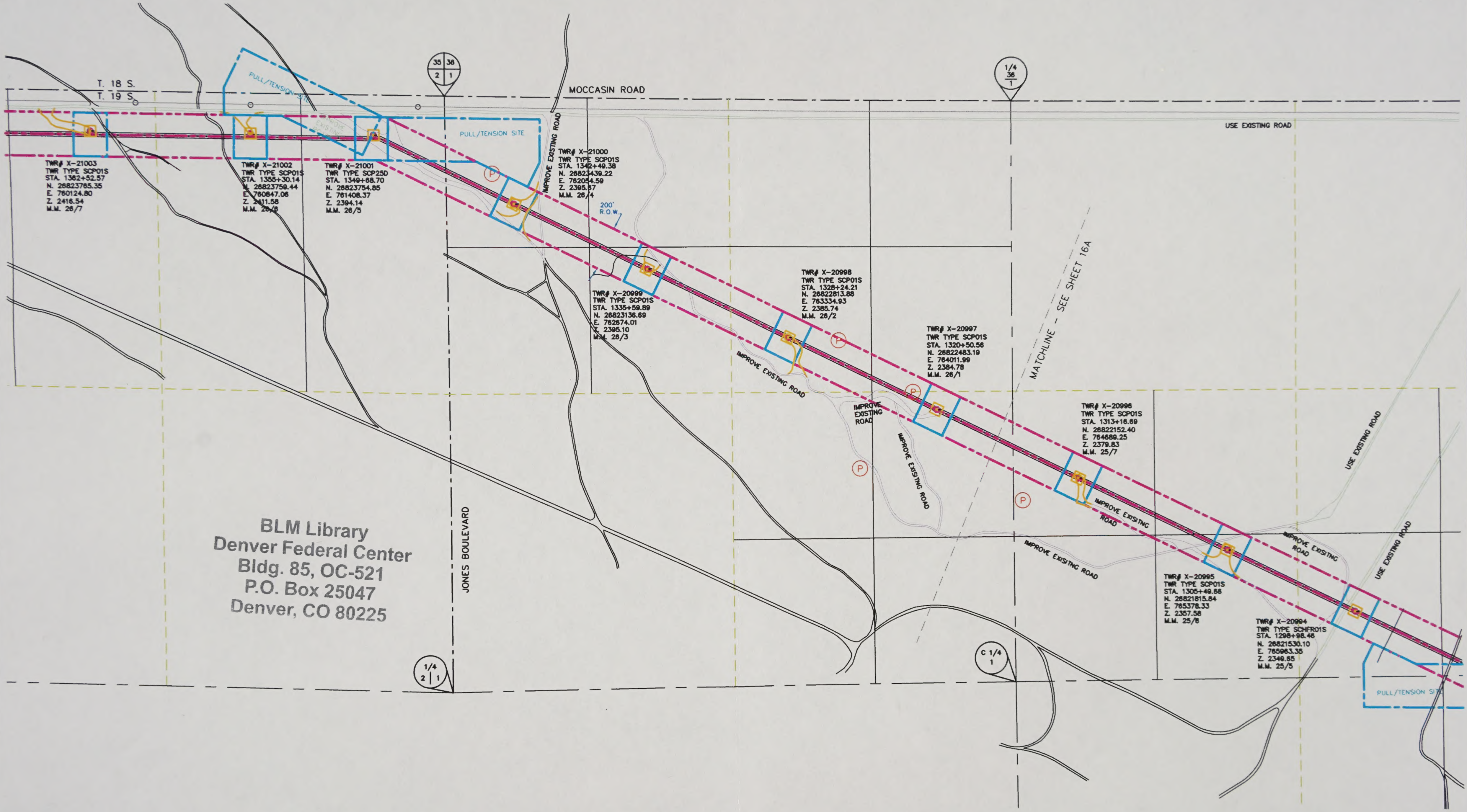
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 61 E

6	5
7	8

CLARK CO.

SHEET NO.
16A
OF
22


T. 18 S.
T. 19 S.
35 | 36
2 | 1
1/4
36
1
MOCCASIN ROAD
PULL/TENSION SITE
IMPROVE EXISTING ROAD
PULL/TENSION SITE
IMPROVE EXISTING ROAD
USE EXISTING ROAD
TWR# X-21003
TWR TYPE SCP01S
STA. 1362+52.57
N. 26823765.35
E. 760124.80
Z. 2416.54
M.M. 26/7
TWR# X-21002
TWR TYPE SCP01S
STA. 1355+30.14
N. 26823759.44
E. 760847.06
Z. 2411.58
M.M. 26/6
TWR# X-21001
TWR TYPE SCP25D
STA. 1349+68.70
N. 26823754.85
E. 761408.37
Z. 2394.14
M.M. 26/5
TWR# X-21000
TWR TYPE SCP01S
STA. 1342+49.38
N. 26823439.22
E. 762054.59
Z. 2395.57
M.M. 26/4
200'
R.O.W.
TWR# X-20999
TWR TYPE SCP01S
STA. 1335+59.89
N. 26823136.69
E. 762674.01
Z. 2395.10
M.M. 26/3
TWR# X-20998
TWR TYPE SCP01S
STA. 1328+24.21
N. 26822813.88
E. 763334.93
Z. 2385.74
M.M. 26/2
TWR# X-20997
TWR TYPE SCP01S
STA. 1320+50.56
N. 26822483.19
E. 764011.99
Z. 2384.78
M.M. 26/1
MATCHLINE - SEE SHEET 16A
IMPROVE EXISTING ROAD
IMPROVE EXISTING ROAD
IMPROVE EXISTING ROAD
TWR# X-20996
TWR TYPE SCP01S
STA. 1313+16.69
N. 26822152.40
E. 764689.25
Z. 2379.83
M.M. 25/7
IMPROVE EXISTING ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
TWR# X-20995
TWR TYPE SCP01S
STA. 1305+49.66
N. 26821815.84
E. 765378.33
Z. 2357.58
M.M. 25/6
TWR# X-20994
TWR TYPE SCHFR01S
STA. 1298+98.46
N. 26821530.10
E. 765963.35
Z. 2349.65
M.M. 25/5
PULL/TENSION SITE
P
P
P
P
P
P
JONES BOULEVARD
1/4
2 | 1
C 1/4
1

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ⊗ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND

TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' NOM)

P PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N

200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED - APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN - NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 60 E

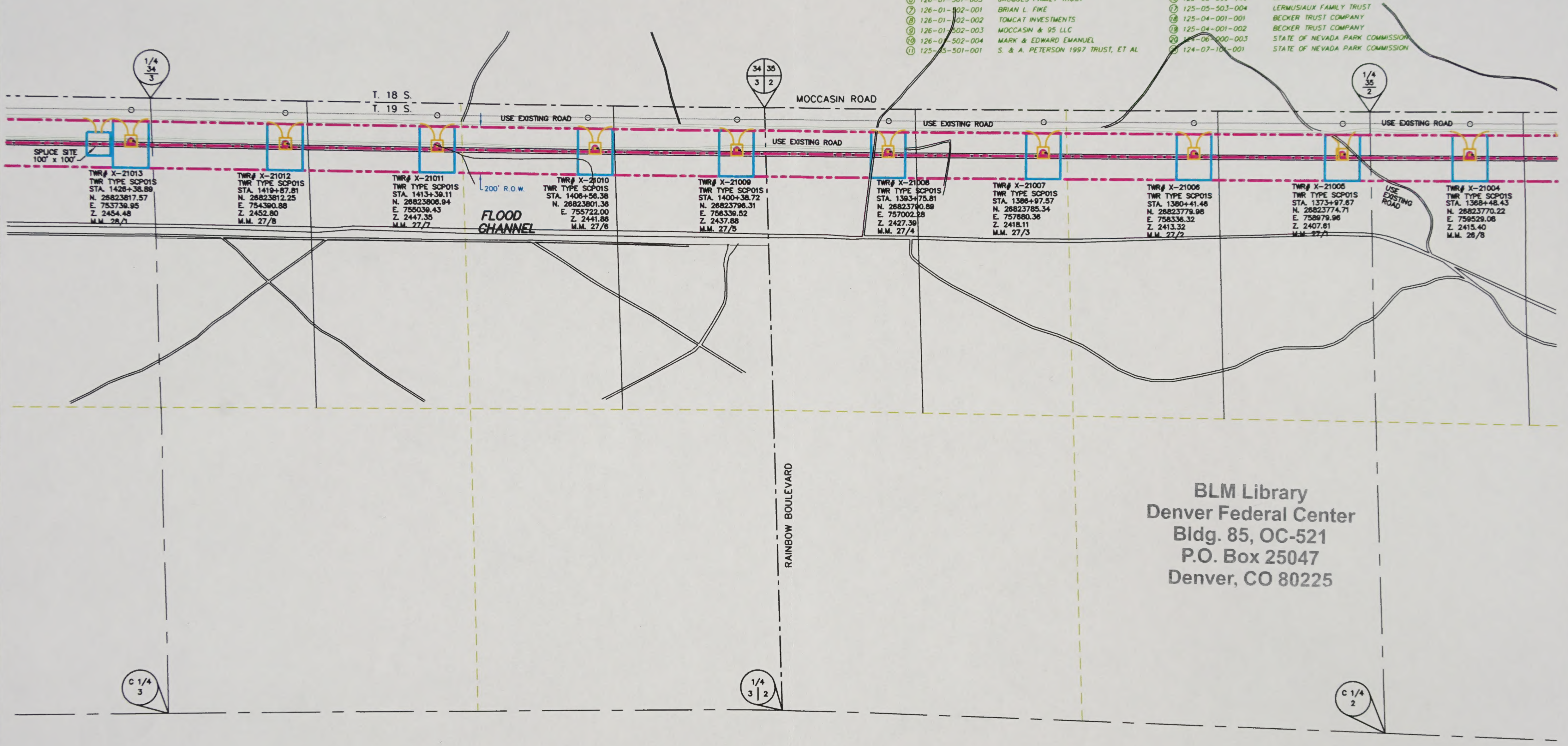
35	36
2	1

CLARK CO.

SHEET NO.
17
OF
22

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	126-01-101-009	B.T. MOCCASIN, LLC
⑤	126-01-501-002	DANIS & ROSNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

	APN	OWNER
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION


1/4 34 3
T. 18 S.
T. 19 S.
USE EXISTING ROAD
SPLICE SITE 100' x 100'
TWR# X-21013
TWR TYPE SCP01S
STA. 1426+38.89
N. 26823817.57
E. 753739.95
Z. 2454.48
M.M. 28/1
TWR# X-21012
TWR TYPE SCP01S
STA. 1419+87.81
N. 26823812.25
E. 754390.88
Z. 2452.80
M.M. 27/8
TWR# X-21011
TWR TYPE SCP01S
STA. 1413+39.11
N. 26823806.94
E. 755039.43
Z. 2447.35
M.M. 27/7
200' R.O.W.
FLOOD CHANNEL
TWR# X-21010
TWR TYPE SCP01S
STA. 1406+56.38
N. 26823801.36
E. 755722.00
Z. 2441.86
M.M. 27/6
34 35 3 2
MOCCASIN ROAD
USE EXISTING ROAD
TWR# X-21009
TWR TYPE SCP01S
STA. 1400+38.72
N. 26823796.31
E. 756339.52
Z. 2437.88
M.M. 27/5
USE EXISTING ROAD
TWR# X-21008
TWR TYPE SCP01S
STA. 1393+75.81
N. 26823790.89
E. 757002.28
Z. 2427.39
M.M. 27/4
TWR# X-21007
TWR TYPE SCP01S
STA. 1386+97.57
N. 26823785.34
E. 757680.36
Z. 2418.11
M.M. 27/3
TWR# X-21006
TWR TYPE SCP01S
STA. 1380+41.46
N. 26823779.98
E. 758336.32
Z. 2413.32
M.M. 27/2
1/4 35 2
USE EXISTING ROAD
TWR# X-21005
TWR TYPE SCP01S
STA. 1373+97.67
N. 26823774.71
E. 758979.96
Z. 2407.61
M.M. 27/1
USE EXISTING ROAD
TWR# X-21004
TWR TYPE SCP01S
STA. 1368+48.43
N. 26823770.22
E. 759529.08
Z. 2415.40
M.M. 26/8
RAINBOW BOULEVARD
C 1/4 3
1/4 3 2
C 1/4 2

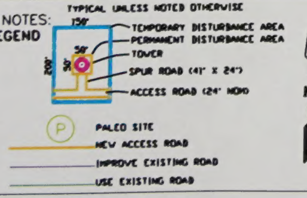
BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

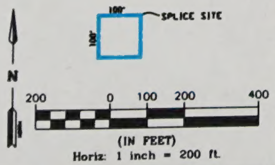
LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES: TYPICAL UNLESS NOTED OTHERWISE

LEGEND


150'
50'
200'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' WIDE)
P
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD


100'
100'
SPLICE SITE
N
200
0
100
200
400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power SM

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 60 E

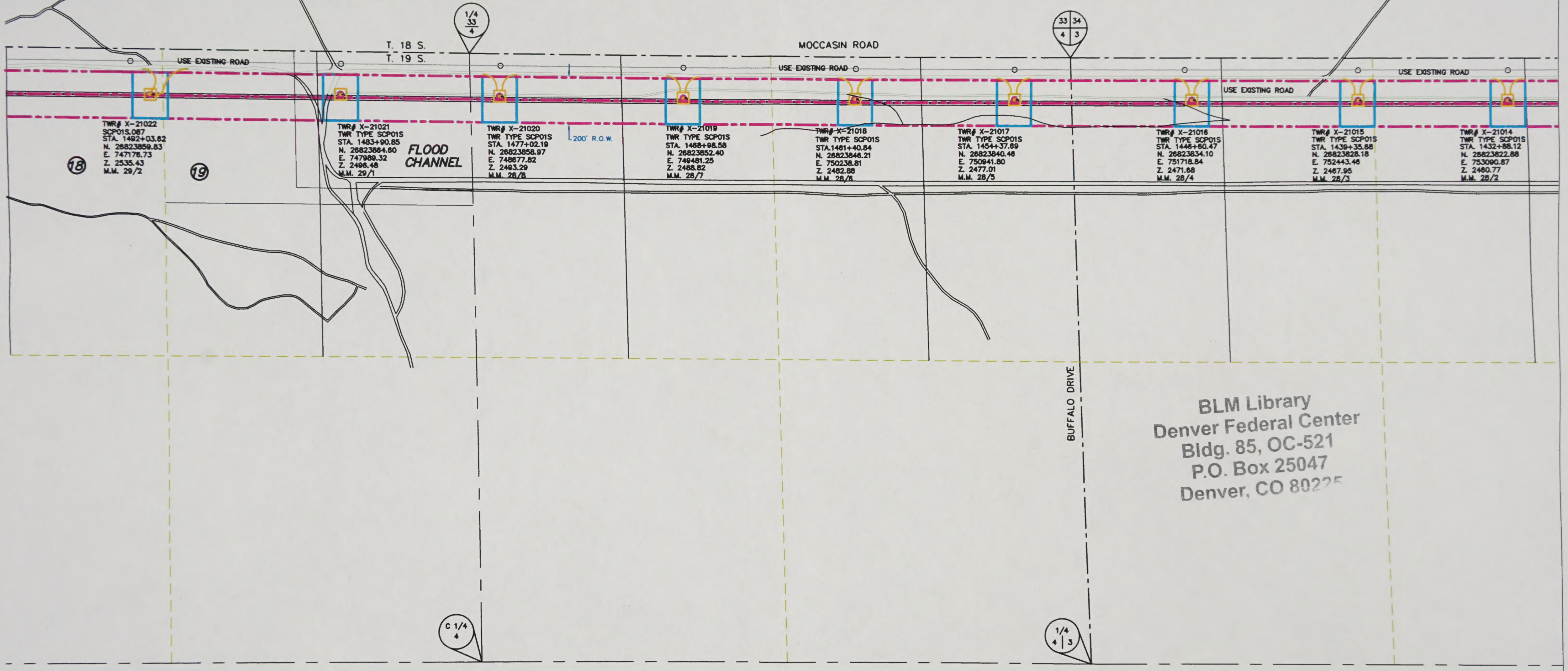
34	35
3	2

CLARK CO.

SHEET NO.
18
OF
22

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	126-01-101-009	B.T. MOCCASIN, LLC
⑤	126-01-501-002	DANIS & BONNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

	APN	OWNER
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION


1/4
33
4
T. 18 S.
T. 19 S.
MOCCASIN ROAD
33 34
4 3
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
USE EXISTING ROAD
TWR# X-21022
SCP01S.087
STA. 1492+03.62
N. 26823859.83
E. 747176.73
Z. 2535.43
M.M. 29/2
⑱
⑲
TWR# X-21021
TWR TYPE SCP01S
STA. 1483+90.85
N. 26823864.60
E. 747989.32
Z. 2496.48
M.M. 29/1
FLOOD CHANNEL
TWR# X-21020
TWR TYPE SCP01S
STA. 1477+02.19
N. 26823858.97
E. 748677.82
Z. 2493.29
M.M. 28/8
200' R.O.W.
TWR# X-21019
TWR TYPE SCP01S
STA. 1468+98.58
N. 26823852.40
E. 749481.25
Z. 2488.82
M.M. 28/7
TWR# X-21018
TWR TYPE SCP01S
STA.1461+40.84
N. 26823846.21
E. 750238.81
Z. 2482.88
M.M. 28/6
TWR# X-21017
TWR TYPE SCP01S
STA. 1454+37.69
N. 26823840.46
E. 750941.80
Z. 2477.01
M.M. 28/5
TWR# X-21016
TWR TYPE SCP01S
STA. 1446+60.47
N. 26823834.10
E. 751718.84
Z. 2471.68
M.M. 28/4
TWR# X-21015
TWR TYPE SCP01S
STA. 1439+35.68
N. 26823828.18
E. 752443.46
Z. 2467.95
M.M. 28/3
TWR# X-21014
TWR TYPE SCP01S
STA. 1432+88.12
N. 26823822.88
E. 753090.87
Z. 2460.77
M.M. 28/2
BUFFALO DRIVE
C 1/4
4
1/4
4 3

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES: TYPICAL UNLESS NOTED OTHERWISE
LEGEND
150'
200'
50'
30'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' WIDE)
Ⓟ PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

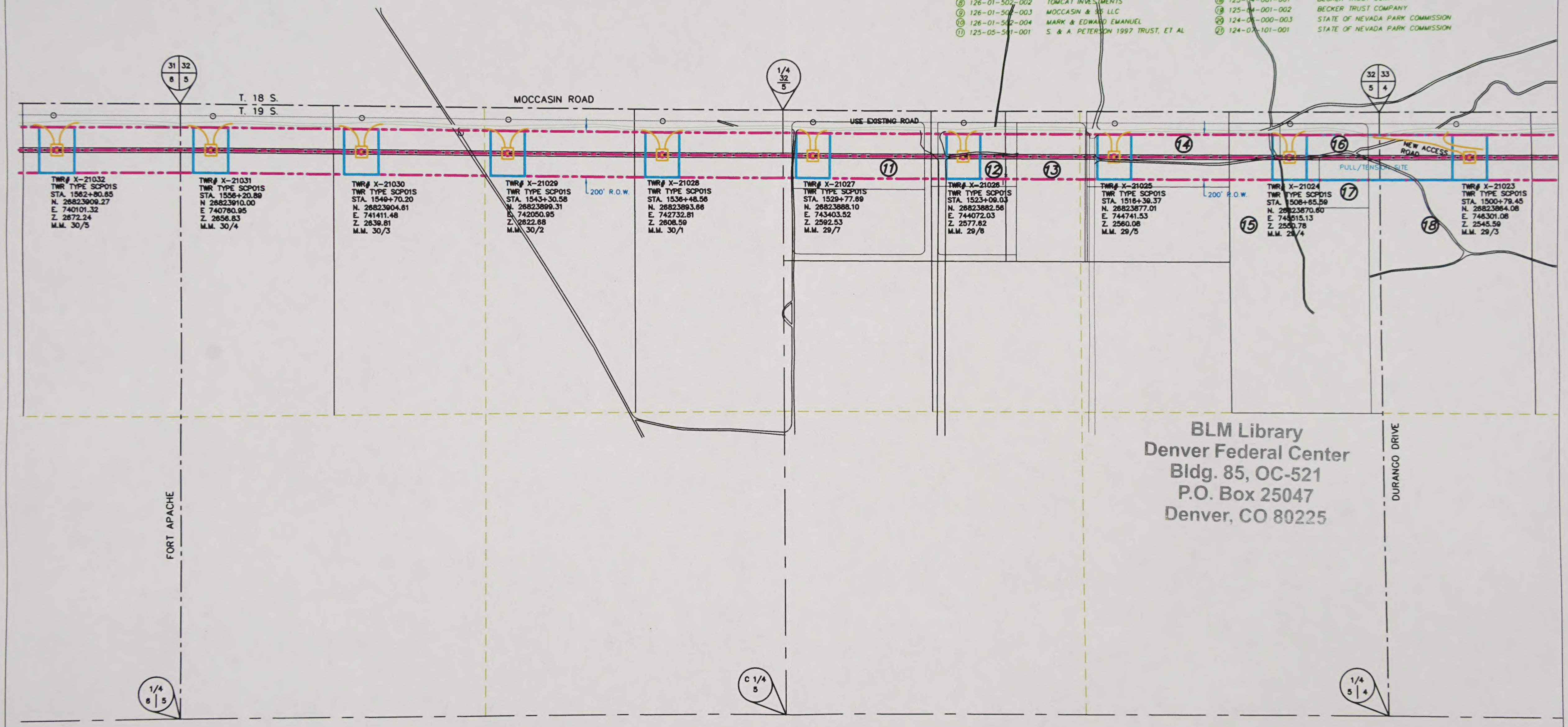
T 19 S
R 60 E
33	34
4	3

CLARK CO.

SHEET NO.
19
OF
22

APN	OWNER
① 126-01-101-015	NEVADA POWER COMPANY
② 126-01-101-007	NEVADA POWER COMPANY
③ 126-01-101-008	MOCCASSIN INVESTMENTS
④ 126-01-101-009	B.T. MOCCASIN, LLC
⑤ 126-01-501-002	DANIS & ROSNELLY MORAN
⑥ 126-01-501-003	JACQUES FAMILY TRUST
⑦ 126-01-502-001	BRIAN L. FIKE
⑧ 126-01-502-002	TOMCAT INVESTMENTS
⑨ 126-01-502-003	MOCCASIN & 95 LLC
⑩ 126-01-502-004	MARK & EDWARD EMANUEL
⑪ 125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

APN	OWNER
⑫ 125-05-502-001	ESCARZAGA & JOHNSON
⑬ 125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭ 125-05-503-001	PAUL JOSEPH ADDI
⑮ 125-05-604-014	HUGO R. PAULSON
⑯ 125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰ 125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱ 125-04-001-001	BECKER TRUST COMPANY
⑲ 125-04-001-002	BECKER TRUST COMPANY
⑳ 124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑ 124-07-101-001	STATE OF NEVADA PARK COMMISSION

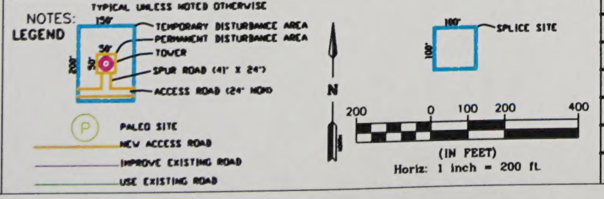

31 32 6 5
T. 18 S.
T. 19 S.
MOCCASIN ROAD
1/4 32 5
USE EXISTING ROAD
32 33 5 4
TWR# X-21032
TWR TYPE SCP01S
STA. 1562+80.65
N. 26823909.27
E. 740101.32
Z. 2672.24
M.M. 30/5
TWR# X-21031
TWR TYPE SCP01S
STA. 1556+20.89
N 26823910.00
E 740760.95
Z. 2656.83
M.M. 30/4
TWR# X-21030
TWR TYPE SCP01S
STA. 1549+70.20
N. 26823904.61
E. 741411.48
Z. 2639.81
M.M. 30/3
TWR# X-21029
TWR TYPE SCP01S
STA. 1543+30.58
N. 26823899.31
E. 742050.95
Z. 2622.68
M.M. 30/2
200' R.O.W.
TWR# X-21028
TWR TYPE SCP01S
STA. 1536+48.56
N. 26823893.66
E. 742732.81
Z. 2608.59
M.M. 30/1
TWR# X-21027
TWR TYPE SCP01S
STA. 1529+77.69
N. 26823888.10
E. 743403.52
Z. 2592.53
M.M. 29/7
⑪
⑫
⑬
TWR# X-21026
TWR TYPE SCP01S
STA. 1523+09.03
N. 26823882.56
E. 744072.03
Z. 2577.62
M.M. 29/6
⑭
TWR# X-21025
TWR TYPE SCP01S
STA. 1516+39.37
N. 26823877.01
E. 744741.53
Z. 2560.08
M.M. 29/5
200' R.O.W.
⑮
TWR# X-21024
TWR TYPE SCP01S
STA. 1508+65.59
N. 26823870.60
E. 745515.13
Z. 2550.78
M.M. 29/4
⑯
⑰
NEW ACCESS ROAD
PULL/TENSION SITE
⑱
TWR# X-21023
TWR TYPE SCP01S
STA. 1500+79.45
N. 26823864.08
E. 746301.08
Z. 2545.59
M.M. 29/3
FORT APACHE
DURANGO DRIVE
1/4 6 5
C 1/4 5
1/4 5 4

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:


LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' NOM)
P
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD
N
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.
100'
100'
SPLICE SITE

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
△0	REVISED – APRIL 30, 2002								

Nevada Power℠

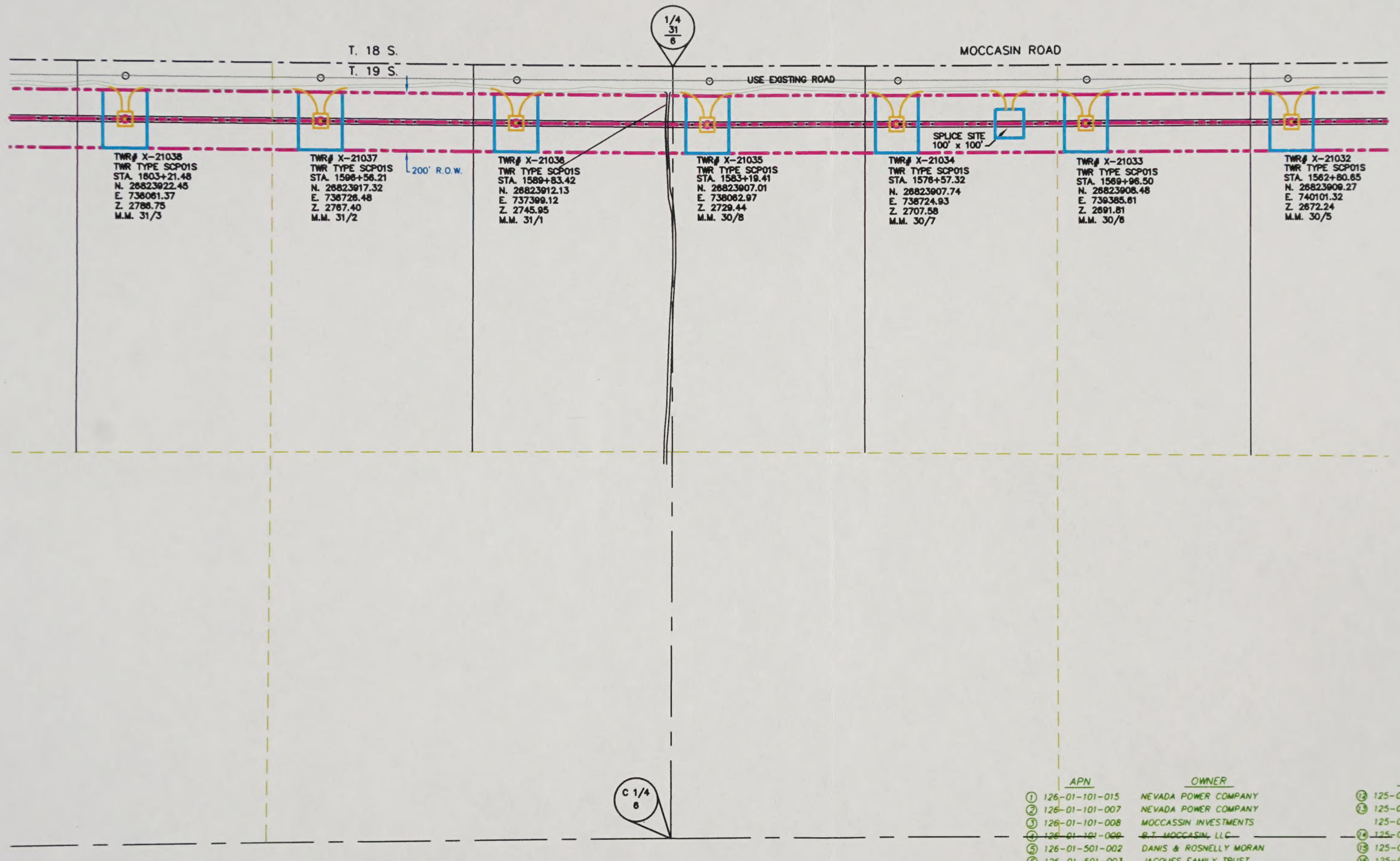
500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.
△

T 19 S
R 60 E
32 33
5 4
CLARK CO.

SHEET NO.
20
OF
22

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225


1/4
31
6
T. 18 S.
T. 19 S.
MOCCASIN ROAD
USE EXISTING ROAD
200' R.O.W.
SPLICE SITE
100' x 100'
TWR# X-21038
TWR TYPE SCP01S
STA. 1603+21.48
N. 26823922.45
E. 736061.37
Z. 2786.75
M.M. 31/3
TWR# X-21037
TWR TYPE SCP01S
STA. 1596+56.21
N. 26823917.32
E. 736726.48
Z. 2767.40
M.M. 31/2
TWR# X-21036
TWR TYPE SCP01S
STA. 1589+83.42
N. 26823912.13
E. 737399.12
Z. 2745.95
M.M. 31/1
TWR# X-21035
TWR TYPE SCP01S
STA. 1583+19.41
N. 26823907.01
E. 738062.97
Z. 2729.44
M.M. 30/8
TWR# X-21034
TWR TYPE SCP01S
STA. 1576+57.32
N. 26823907.74
E. 738724.93
Z. 2707.58
M.M. 30/7
TWR# X-21033
TWR TYPE SCP01S
STA. 1569+96.50
N. 26823908.48
E. 739385.61
Z. 2691.81
M.M. 30/6
TWR# X-21032
TWR TYPE SCP01S
STA. 1562+80.65
N. 26823909.27
E. 740101.32
Z. 2672.24
M.M. 30/5
C 1/4
6

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	~~126-01-101-009~~	~~B.T. MOCCASIN,~~ LLC
⑤	126-01-501-002	DANIS & ROSNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

	APN	OWNER
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE
150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' x 24')
ACCESS ROAD (24' NOM)
(P) PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD

100'
100'
SPLICE SITE

N
200 0 100 200 400
(IN FEET)
Horiz: 1 inch = 200 ft.

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

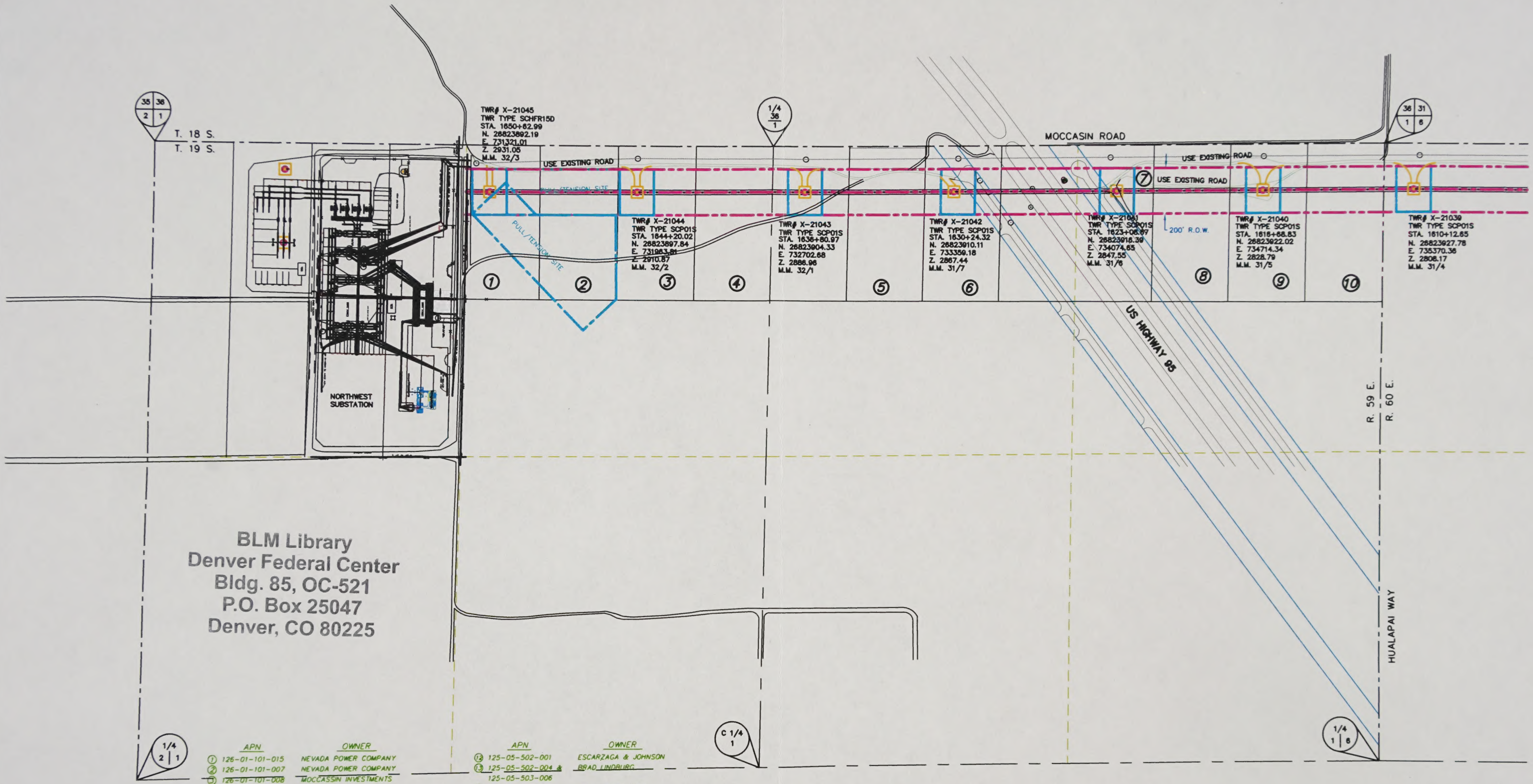
DWG. NO.
SCALE: 1" = 200'
N/A
W.O. NO.

T 19 S
R 60 E

31	32
6	5

CLARK CO.

SHEET NO.
21
OF
22



35 | 36
2 | 1
T. 18 S.
T. 19 S.
NORTHWEST SUBSTATION
TWR# X-21045
TWR TYPE SCHFR15D
STA. 1650+62.99
N. 26823892.19
E. 731321.01
Z. 2931.05
M.M. 32/3
USE EXISTING ROAD
PULL/TENSION SITE
PULL/TENSION SITE
TWR# X-21044
TWR TYPE SCP01S
STA. 1644+20.02
N. 26823897.84
E. 731963.81
Z. 2910.87
M.M. 32/2
1/4
36
1
TWR# X-21043
TWR TYPE SCP01S
STA. 1636+80.97
N. 26823904.33
E. 732702.68
Z. 2886.96
M.M. 32/1
TWR# X-21042
TWR TYPE SCP01S
STA. 1630+24.32
N. 26823910.11
E. 733359.18
Z. 2867.44
M.M. 31/7
MOCCASIN ROAD
USE EXISTING ROAD
USE EXISTING ROAD
TWR# X-21041
TWR TYPE SCP01S
STA. 1623+06.67
N. 26823916.39
E. 734074.65
Z. 2847.55
M.M. 31/6
200' R.O.W.
TWR# X-21040
TWR TYPE SCP01S
STA. 1616+68.83
N. 26823922.02
E. 734714.34
Z. 2828.79
M.M. 31/5
TWR# X-21039
TWR TYPE SCP01S
STA. 1610+12.65
N. 26823927.78
E. 735370.36
Z. 2808.17
M.M. 31/4
36 | 31
1 | 6
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
US HIGHWAY 95
R. 59 E.
R. 60 E.
HUALAPAI WAY
1/4
2 | 1
C 1/4
1
1/4
1 | 6

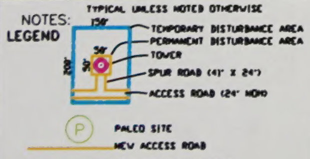
BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

	APN	OWNER
①	126-01-101-015	NEVADA POWER COMPANY
②	126-01-101-007	NEVADA POWER COMPANY
③	126-01-101-008	MOCCASSIN INVESTMENTS
④	126-01-101-009	B.T. MOCCASIN, LLC
⑤	126-01-501-002	DANIS & ROSNELLY MORAN
⑥	126-01-501-003	JACQUES FAMILY TRUST
⑦	126-01-502-001	BRIAN L. FIKE
⑧	126-01-502-002	TOMCAT INVESTMENTS
⑨	126-01-502-003	MOCCASIN & 95 LLC
⑩	126-01-502-004	MARK & EDWARD EMANUEL
⑪	125-05-501-001	S. & A. PETERSON 1997 TRUST, ET AL

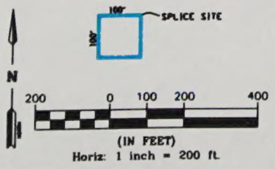
	APN	OWNER
⑫	125-05-502-001	ESCARZAGA & JOHNSON
⑬	125-05-502-004 & 125-05-503-006	BRAD LINDBURG
⑭	125-05-503-001	PAUL JOSEPH ADDI
⑮	125-05-604-014	HUGO R. PAULSON
⑯	125-05-503-003	LERMUSIAUX FAMILY TRUST
⑰	125-05-503-004	LERMUSIAUX FAMILY TRUST
⑱	125-04-001-001	BECKER TRUST COMPANY
⑲	125-04-001-002	BECKER TRUST COMPANY
⑳	124-06-000-003	STATE OF NEVADA PARK COMMISSION
㉑	124-07-101-001	STATE OF NEVADA PARK COMMISSION

LEGEND:
- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ● EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:
LEGEND
TYPICAL UNLESS NOTED OTHERWISE



150'
200'
50'
50'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (4 1' X 24')
ACCESS ROAD (24' MOM)
P
PALEO SITE
NEW ACCESS ROAD
IMPROVE EXISTING ROAD
USE EXISTING ROAD



N
200
0
100
200
400
(IN FEET)
Horiz: 1 inch = 200 ft.

100'
100'
SPLICE SITE

REV	DESCRIPTION REVISION RECORD	DRAFTR	DATE	DESNED	DATE	CKED	DATE	APP'D	DATE
△									
△									
△									
△									
△									
0	REVISED – APRIL 30, 2002								

Nevada Power℠

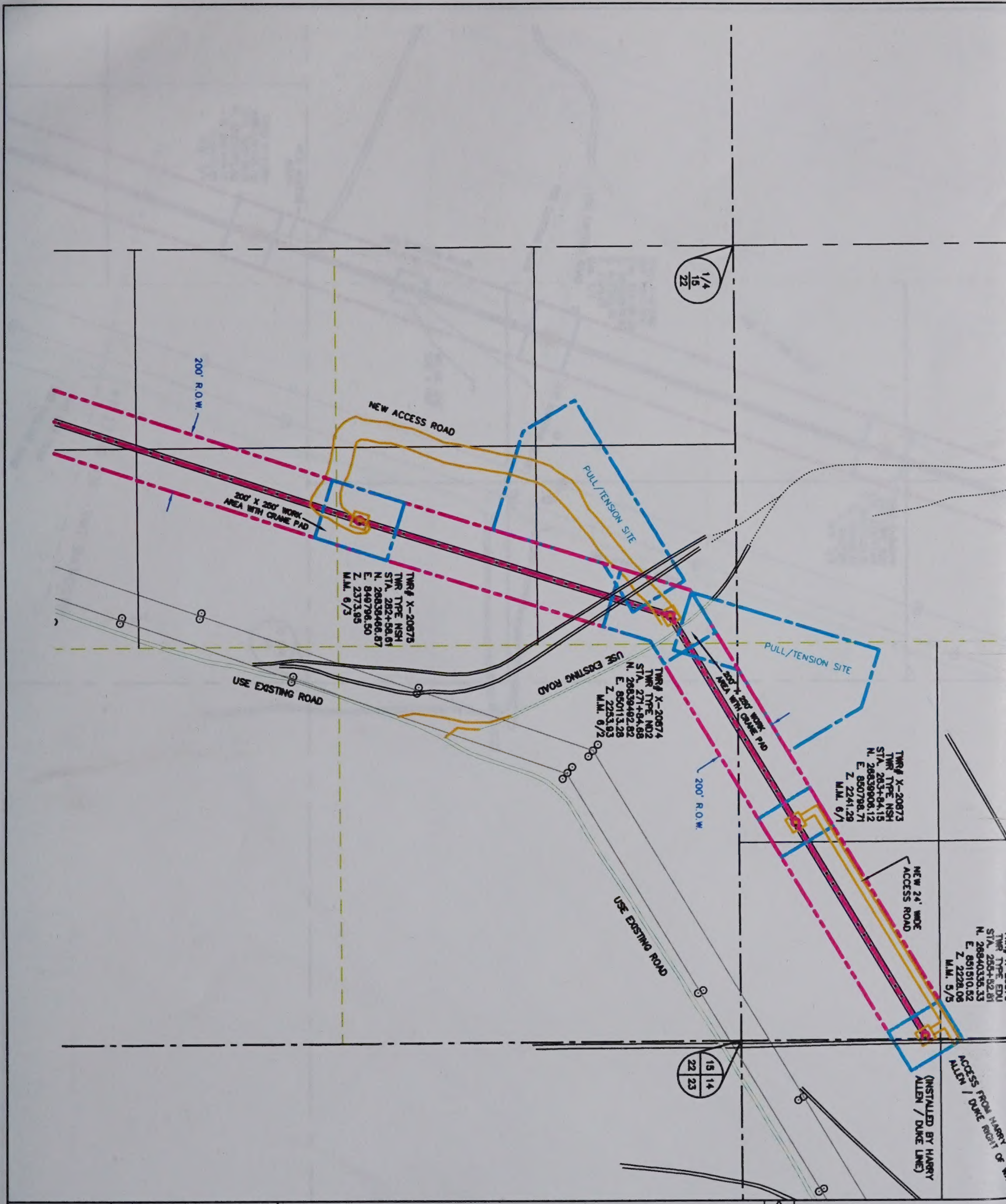
500 KV
HARRY ALLEN – NORTHWEST
TRANSMISSION LINE

DWG. NO.
SCALE: 1" = 200' N/A
W.O. NO.

T 19 S
R 59 E
36	31
1	6

CLARK CO.

SHEET NO.
22
OF
22


1/4
15
22
200' R.O.W.
NEW ACCESS ROAD
PULL/TENSION SITE
200' X 250' WORK AREA WITH CRANE PAD
TWR# X-20875
TWR TYPE NSH
STA. 282+58.61
N. 26838466.87
E. 849796.50
Z. 2373.85
M.M. 6/3
USE EXISTING ROAD
USE EXISTING ROAD
TWR# X-20874
TWR TYPE ND2
STA. 271+84.68
N. 26839402.82
E. 850113.28
Z. 2253.93
M.M. 6/2
200' X 200' WORK AREA WITH CRANE PAD
PULL/TENSION SITE
200' R.O.W.
TWR# X-20873
TWR TYPE NSH
STA. 263+84.15
N. 26839906.12
E. 850798.71
Z. 2241.29
M.M. 6/1
NEW 24' WIDE ACCESS ROAD
TWR TYPE EDU
STA. 255+82.81
N. 26840335.33
E. 851510.52
Z. 2228.06
M.M. 5/5
USE EXISTING ROAD
15 14
22 23
ACCESS FROM HARRY ALLEN / DUKE RIGHT OF
(INSTALLED BY HARRY ALLEN / DUKE LINE)

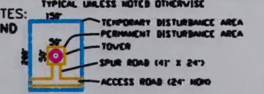
LEGEND:

- ● NEW POLE
- ○ EXISTING POLE
- ☒ EXISTING POLE TO BE REMOVED
- ☒ EXISTING POLE TO BE REPLACED
- ▲ ANGLE
- D DEAD END

NOTES:

LEGEND

TYPICAL UNLESS NOTED OTHERWISE

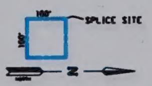

150'
30'
30'
200'
TEMPORARY DISTURBANCE AREA
PERMANENT DISTURBANCE AREA
TOWER
SPUR ROAD (41' X 24')
ACCESS ROAD (24' WIDE)

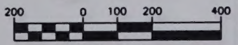
Ⓟ PALEO SITE

NEW ACCESS ROAD

IMPROVE EXISTING ROAD

USE EXISTING ROAD


100'
100'
SPLICE SITE
N


200
0
100
200
400

(IN FEET)
Horiz: 1 inch = 200 ft.

REV	
△	
△	
△	
△	
△	
0	REVISED – APRIL 30, 2002
REV	DESCRIPTION REVISION